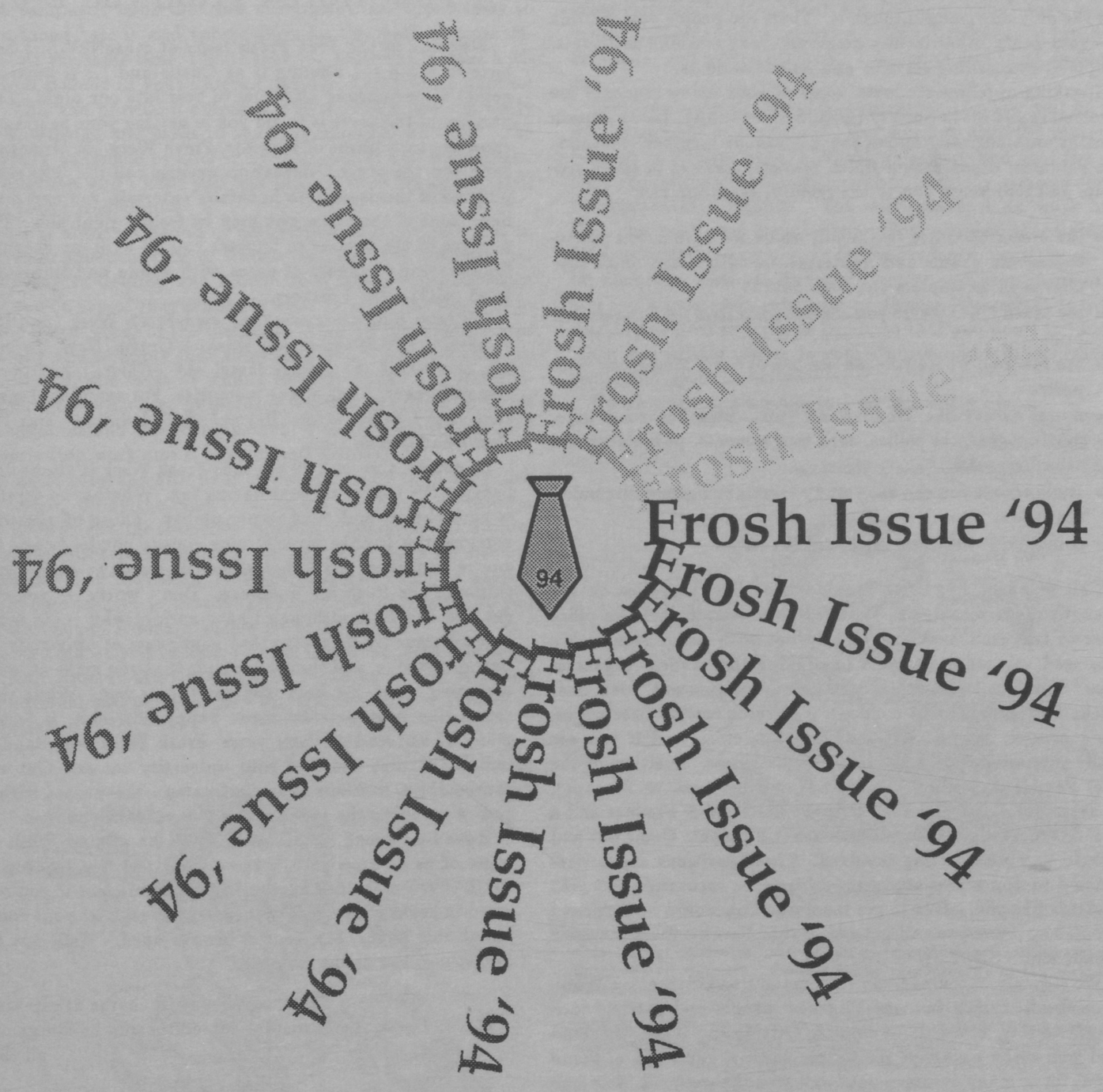


# math NEWS

Volume 66  
Issue 0



## Prez Sez

### Spring 1994 Exec

Mike Arsenault

Ron Servant

Andrew Goodin

### Prez

V-Prez Activ./Serv.

V-Prez Finance

### Fall 1994 Exec

Marco Koechli

&lt; vacant &gt;

&lt; vacant &gt;

Congratulations! Welcome to Canada's best university (see MacLean's poll, Fall 1992). You are now part of the only faculty of math in North America.

Be prepared for a big change in your life. Unless you are living at home, you'll have to learn to fend for yourself. University is very different from high school - I'm sure you have noticed already. You will have more people in your classes, a heavier workload, more responsibilities, different social life, new friends and the list goes on. The good thing about this is that you are not the only one going through it. There are people you can talk to - your profs, other faculty members, your teaching assistants, people at counselling services and fellow students.

Speaking of fellow students, some of your fellow students are involved in the Math Society (MathSoc for short). Being a math student automatically makes you a MathSoc member. MathSoc is a volunteer organization which provides services to Math students and represents you to the faculty. MathSoc has:

- the MathSoc Office (MC3038) where we have 5 cent photocopies, old exams and midterms, novelties, and office supplies such as staplers and hole punches
- the Math C+D where you can get good food for a reasonable price
- the MacLab where you can use one of our 3 Macintosh computers
- Social events like Wonderland trips, Blue Jay road trips, movie nights, car rallies, card tournaments, pub nights and other fun stuff
- study rooms you can use - study carrels and group discussion areas
- committees that deal with student issues

This is where you come in. MathSoc lives and dies on the strength of its volunteers. We need volunteers to hold an office hour or two each week and to help out with social events. We also need volunteers to assist in running this student organization. You can be a class representative (represent your class to the MathSoc student council), a director (social director, office manager, internal/external director, etc.), and if you are really interested, you can run to be President, or either of the Vice President positions (Activities and Services, or Finance), or Treasurer. This Fall 1994 term we need a V-P Finance and a V-P Act/Serv since the positions are still vacant. Come out and talk to us about getting involved. These positions are not restricted to upper year students - in fact, we encourage first year students like yourselves to get involved. You would be surprised about how much you can get out of this - work experience, new friends and FUN, FUN, FUN.

We strongly encourage you to come out to Orientation Week. A week filled with fun, meeting new people and getting "oriented" to UW. If you don't come to Orientation Week you could find yourself in a class of 150 people and not know any of them! Come for as many events as you can - even the weekend. Don't go home! If you do you'll miss the fabulous scavenger hunt. Don't

be hesitant to make friends on the other stream. You never know if you'll have a change of heart (or a change of major) and have to switch streams.

We look forward to seeing you during Orientation Week.

Mike Arsenault

Marco Koechli

## A Few Words From the Editor

Welcome to the 1994 Frosh Issue of *mathNEWS*. I hope you have as much fun reading it as Curtis and I did putting it together after finishing off a case of beer late one night. The main purpose of this issue is to aid you in getting your bearings as you enter the next phase of your life, Frosh Week (or Orientation, as Jane and the other Orientation weenies call it). The secondary purpose of this issue is to hopefully entertain you and maybe relieve some of the stress you may be feeling right now. The final purpose of the issue is to impress you all with my charm, hopefully leading to plenty of dates with young and impressionable frosh chicks. But I digress.

It's been four years since my own Frosh Week (and it's been something like fifteen for my sidekick Curtis [*Hey! It's only been 12. Don't rush the old age thing, eh? -Curtis*]), but the memories still linger. Well, vague memories. For example, I remember that that I drank a lot. Beyond that, I dunno - but I'm sure that I had a good time.

Of course, this isn't to say that Frosh Week is about drinking, because it's not. It's about having fun. Whether to drink or not is your choice, and your responsibility. Those of you with real personalities (unlike myself) may choose not to drink. (And if you're underage, you're not alone. These days, more than two-thirds of the frosh are underage. Don't worry - you can still get into Fed Hall, although I have no idea why you'd want to).

It's frequently been said that your years at university are the best of your life, and that the friends that you make at university are going to be the best that you'll ever had. While this may sound like your parents' usual happy horseshit, it is true for many of us. And of those years, Frosh Week will stand out as one of the best times of your university career. Get out, get involved, get to know your classmates - the people with whom you're spending the next four or five years of your life.

Have fun, young froshlings. I won't be around Frosh Week - some of us *do* have jobs, y'know - but feel free to drop by the *mathNEWS* office during the first week of class if you're interested in getting involved, or just want to register your comments about this issue. My door is always open. Well, not always. Sometimes I'm at the Bomber.

Steve Shaw, editor-guy in charge of drinking beer  
Curtis Desjardins, assistant sub-editor guy in charge of doing  
all the work

## From The Faculty

I am pleased to have the opportunity to extend my greetings to the first-year class in this year's Orientation Issue of *mathNEWS*. I want to welcome you to the Faculty of Mathematics and wish you every success in your program of studies at the University of Waterloo. There is a tremendous variety of things to learn and do here, and many personal adventures await you as you initiate and progress through your undergraduate career.

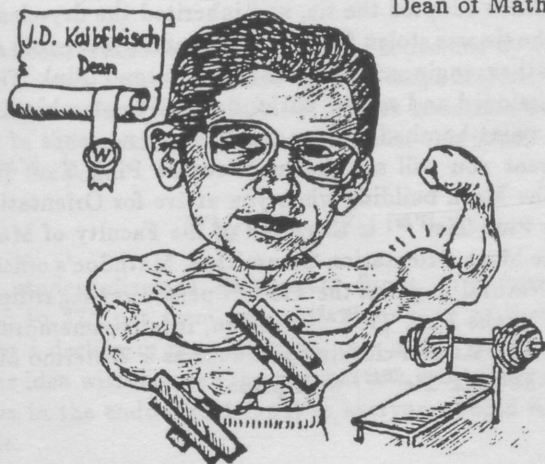
I am sure that one of the advantages that attracted you to the Faculty of Mathematics is the wide range of mathematical and computer-related courses available to you during your undergraduate program. Over the next four years, you have a wonderful opportunity to learn about many areas of the mathematical sciences as well as about disciplines in other Faculties across campus. I hope that you will exploit this opportunity to gain a broad base in and appreciation for the mathematical sciences. At the same time, I hope that you will expand your horizons and include in your program several courses from another area. This can provide a potential field to which you can apply your knowledge and skills in the mathematical sciences. The University has much to offer in both academic and extracurricular activities and I hope you will endeavour to involve yourself in the larger community.

There is always a period of adjustment as students adapt to the greater independence of University life. It is now your responsibility to develop and adhere to a study schedule which keeps you on top of your academic work. You will be required to develop a firm grasp of the theoretical bases of the subjects that you study and to apply that knowledge in solving problems. To be successful, you must be willing to delve deeply and strive always for understanding. In teaching, our aim is to help to direct your enquiries and to encourage you to learn. Learning is hard but rewarding work and it is your responsibility.

My office is on the fifth floor of the MC building in the south west corner. Along the same corridor are the offices of Professor John Wainwright, the Associate Dean for Undergraduate Studies and of Professor Ron Dunkley, the Associate Dean for Faculty Programs. The Mathematics Undergraduate Office is nearby. We are here to help so that if there are areas of concern to you as Math Faculty students, please let us know.

I wish each of you success in your academic work and hope that your time at the University of Waterloo will be a period of intellectual and personal growth. Welcome to the Faculty of Mathematics.

J.D. Kalbfleisch  
Dean of Mathematics



I would like to extend a warm welcome to you all as you begin your first year at the University of Waterloo.

Your first experience at the University in the Fall will be Orientation Week. One purpose of orientation is to provide an opportunity for you to meet some of your fellow students and faculty members. There are two activities that I would like to mention.

OPERATION MATHSTART, which begins on Tuesday, September 7, will assist you with registration and scheduling problems. Even if you haven't encountered such problems, the MATHSTART centre is also a good place to meet other students and faculty members in an informal atmosphere.

MATH DAY, on Wednesday, September 8 is jointly sponsored by the Faculty of Mathematics and MathSoc. The day-long program includes breakfast with the Dean, meetings with your Algebra, Calculus, and Computer Science professors, a lunch-time barbecue, and a Student Panel Discussion and Information Session.

Lectures begin on Monday, September 13. You will be faced with a number of challenges. You will find that the material is covered at a faster pace than in high school, and that the problems require careful thought, rather than the straight-forward application of a formula. You will thus have to work harder than you have ever done before. Most people have difficulties. Discuss problems with your fellow students, possibly at regular meetings, visit the Tutorial Centre, and keep in mind that you can also consult with your professors. The secret is to start working as soon as lectures begin, so that you don't fall behind. Then you will do justice to your studies, and still have time for social and sporting activities.

I wish you every success in your university life.

John Wainwright  
Associate Dean, Undergraduate Studies



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Editor: Steve "Lording Take-No-Crap Editor Dude" Shaw, Curtis "Pathetic Slave to Steve's Editorial Whims" Desjardins

## The Math Society

*You are all MathSoc members!*

- **What is MathSoc?**

MathSoc is the student society to which every math student belongs. The society is active in all areas of math student life: from the faculty level right on down to the frosh. MathSoc uses your \$7.50 fee to provide all kinds of services and events for its members.

- **Where can I find MathSoc?**

The MathSoc office is located in MC 3038. This room is the hub of all MathSoc activities as well as the best place to go when you have any kind of problem. If we don't know the answer, chances are we know someone who does.

- **What does MathSoc do?**

Free services provided by MathSoc to its members include: a telephone, change (\$\$), lost and found, a mail drop, copies of old exams, five cent photocopies, lockers and use of the Macintosh computer equipment. Across the lobby is the Comfy Lounge and the C+D where you can get food and drink at very reasonable prices. MathSoc runs an individual quiet study room and a group study room on the fourth floor. MathSoc also sells buttons, recycle mugs, pencils, and shirts for a low price.

In addition to these services, MathSoc also organises social events. These range from bands at Fed Hall to Blue Jays road trips to Oktoberfest tickets to BBQ's and more. All of these events are subsidised somewhat by your fees and so are considerably cheaper than you might expect.

- **Who does all of this stuff?**

As you might guess, lots of people are needed to staff the office and help out with social events. These people, all volunteers, are called (cleverly enough) the office workers. Office workers spend an hour or more a week just sitting in the office and acting as a well of information and assistance to anyone who comes in. You don't have to know much to be an office worker, just where the staplers are and who's next in the chain of command if you can't answer someone's question. It's a great way to start to getting involved with the Society. Just sign up for an hour on the MathSoc office door and show up for that hour.

- **Who's really in charge?**

MathSoc itself is run by the MathSoc Council. This council consists of three groups: the elected executive, the appointed executive, and the class reps. The elected executive (the President, Vice-President Activities and Services, and Vice President Finance) are the ones ultimately in charge of what MathSoc does. The appointed executive is appointed by Council near the beginning of term and includes, among others, the Social Director, Council Speaker, and Office Manager. You should speak to a member of the executive or leave a message for them in the MathSoc office if you're interested in one of these positions. Class reps are elected by each class (1<sup>st</sup> year regular, 3<sup>rd</sup> year co-op, etc) at the beginning of each term. The next election (and your chance to be elected to the MathSoc Council) will be during the first three weeks in September.

- **Where do I sign up?**

If you're interested in becoming a part of this campus' most exciting and dynamic student society, MathSoc is for you. You can get involved to any degree you want, from office worker to elected council member. The demands on your time aren't bad, and you'll meet a whole bunch of people who are as interested as you in having the best time possible while at good ol' UW.

## The Pink Tie <sup>[TM]</sup>

Waterloo leads the world (or at least Canada) in technological education. We can boast about leading the fashion world, too. Many people have taken to wearing pink ties as part of their everyday attire. Waterloo started this fashion trend. You see, the Pink Tie<sup>[TM]</sup> is the (un)official mascot of the University of Waterloo Mathematics Faculty.

How did Waterloo start this trend? As the story goes (passed down from grads to frosh over the decades), there once was a particular professor of mathematics (Ralph Stanton) who loved to wear outlandish gaudily-coloured ties. One of these ties was mostly pink with strange lines on it. This particular professor also happened to be the founder of the fledgling Faculty of Mathematics, lending some importance to his attire.

Mathematics students, being the unconventional bunch they usually are (and we hope you are no different), seized the wonderful opportunity for being irreverent but non-destructive and chose a tie as their official symbol, and pink as its official colour.

During the construction of the Mathematics and Computer building in November 1967, some of the aforementioned math students decided that the new building was a monstrosity and could use some decoration. (Some people still say that. Then they go and design the Davis Centre — it's even worse!) Late one Sunday night a few weeks later, a handful of brave mathies found their way on to the roof of the brand new building. On Monday morning the campus awoke to see an 85-foot Pink Tie hanging from the roof!

MathSoc adopted the tie, and inherited the dry-cleaning bills, until the tie was stolen for a final time and irreversibly desecrated by heathen engineering students. A second Pink Tie<sup>[TM]</sup> was commissioned and served faithfully until September 1986, when it was paint-bombed. (Some people have no sense of decorum.) This year you will see the most recent Pink Tie<sup>[TM]</sup> hanging from the Math building when you arrive for Orientation Week.

The Pink Tie<sup>[TM]</sup> is a symbol of the Faculty of Mathematics and the Math Orientation Committee. MathSoc's official symbol is the Natural Log, but the Tie<sup>[TM]</sup> perseveres regardless! As the legend of the Pink Tie<sup>[TM]</sup> lives on, it is commemorated in the fashionable item of clothing you wear as a Waterloo Math frosh. Wear the Pink Tie<sup>[TM]</sup> with pride.

## Endowment Fund

*Coming Soon to a Faculty Near You*

Welcome to the University of Waterloo. You are coming to our illustrious realm of higher learning at an important time in the history of the Faculty of Mathematics.

The slow economy has been hitting universities all across Canada, and Waterloo is no exception to that rule. Real monetary resources have been reduced, and the faculty may have been facing a funding crisis within the next few years. That is, until the formation of the Mathematics Endowment Fund.

### *What is MEF?*

The Mathematics Endowment Fund is a fund that is continually increased, but only the interest is ever spent. In this way, the main chunk of capital is never touched, and the endowment continues forever.

### *Where does the money come from?*

The money comes from 3 sources: the Voluntary Student Contribution (VSC), Employer Matching Contributions (EMC), and the Pink Tie Pledge (PTP) (for graduating students).

The VSC is on the fee statement for the first time this term. As this name implies, it is a *voluntary* contribution. If you want to get your \$31.42 back, then just fill out a form that will be available on the third floor of the Math Building during the first 3 weeks of term. Before you get your money back, though, think about the benefits of where this money could go.

### *Where does the money go?*

Education is not free, as you have just found out when you opened up your fee statement. Unfortunately, much of the money that you are paying out doesn't adequately fund all of the programs that are necessary to keep the level of teaching where it is today.

Waterloo certainly has one of the most extensive undergraduate computing environments in North America, but it takes money to maintain it and upgrade to keep with the times. Programs for students in their first couple of years, such as the tutorial centre, and the MacLab require money. Various other departments offer labs that require equipment that requires... you guessed it... money.

### *Who decides how to spend it?*

All decisions where the money is spent is decided by the MEF Funding Council, which is made up of a large majority of students, and some faculty members. If you are interested in getting involved in the workings of the faculty, then this is an ideal opportunity for you.

### *Why \$31.42?*

Other student-directed endowment funds on campus range from \$45 to \$75 per term per student. Many of these funds have seen a decline in popularity because of the relatively large cost. The idea with keeping the number low was to increase participation in the endowment fund, so everyone would feel like a part of it.

The number \$31.42 was chosen because, when the numbers were projected, it seemed to meet the future demand, and, hey, it's approximately  $10\pi$ .

### *Onwards! Into the Future!!*

You are the first group of frosh that will experience MEF from the time you start, through to your entire undergraduate career. Get involved in the upkeep of MEF, and in the changes that will inevitably happen while you are here.

This endowment is for you, and those that will follow you. Onwards! Into the future!!

Eric Sutherland  
Co-Founder of the MEF

## Getting Around

### **Local, Private, Four Wheels**

For those driving to school from off-campus, go to security the *first day* you arrive if you hope to get a parking space. If you don't pay the fee to have a spot, get used to paying 75 cents or \$1 for daily parking, and remember to have some quarters in the car at all times. If you try to park illegally in loading docks or on the road, you generally have a half hour grace before you get the \$25 fine, then another hour before your car is towed.

### **Local, Public**

Public transit in this city is run by Kitchener Transit, often referred to as Gestapo Transit (Kitchener *was* called Berlin at one time, you know). This organisation runs about 15 routes in and around K-W, including UW. It costs \$1.35 to ride the bus but monthly passes are available if you plan to use the bus frequently. There are also university passes which last for a term and are really useful.

For a list of useful bus routes you can head downtown to the Transportation Centre or check out the display in the Campus Centre. The transit information number is 885-7373. You can use the "Telerider" service, too. Just call the number listed on the desired bus stop to find out when the next bus leaves from there.

The Federation of Students at UW have been running something called The Safety Van, which runs through most of the student residential areas. This service is designed to encourage women to stay off dark streets and pathways during the evenings; hence, the van is primarily for female students. This is a free service.

### **Inter-City**

Aside from the usual VIA Rail and Grey Coach services, the Federation of Students runs a cheap express bus to Toronto (Islington Station) on Fridays and from Toronto on Sundays. The prices are \$9.00 one way and \$17.00 return.

## mathNEWS and you

Your Faculty Newspaper

mathNEWS has been informing, entertaining, and occasionally disgusting readers on Fridays mornings for over twenty years, making it one of the oldest periodicals on campus. While the magazine (or newspaper, or newsletter, or pretty much whatever the current editor feels like calling it) is aimed primarily at math undergraduates, it is also read by undergrads in the other faculties, graduate students, professors, and the administration.

The content (and quality) of mathNEWS varies from term to term as editors and contributors drift on- and off-campus, blown by the winds of co-operative education. However, some things are fairly constant, such as profQUOTES, a collection of actual quotes from actual profs, usually uttered while teaching actual students. (If your prof happens to say anything exceptionally witty (or, as is more often the case, stupid), write it down and drop it in the BLACK BOX outside the Comfy Lounge on the 3rd floor of the MC. If it's something we haven't seen before, and we like it, we'll put it in mathNEWS.) Club news and MathSoc updates can also be found in mathNEWS, as well as whatever other articles people feel like writing (although most of the other articles tend to have a humorous slant to them).

mathNEWS, like everything else in MathSoc, is always looking for folks willing to help out. Writers, typists, proofreaders, artists, layout people, and distribution people are all welcome. Production nights are every second Monday, and the paper then comes out on the following Friday. If you're busy on Monday nights, feel free to drop your articles off at the mathNEWS office (MC 3041) or in the BLACK BOX, or mail them to our Usenet account, mathnews@undergrad.math.

There will be an organizational meeting early in September, to, well, get organized. Feel free to come on out!

Steve Shaw  
editor-elect, Fall 1994

## My Life as a mathNEWS writer

I used to be a dull, boring, poor excuse for a human being. My life had no direction. My biggest thrill was differentiating logarithmic functions on a Friday night.

Then, one day, a friend of mine asked me to come out to a mathNEWS writers' night. I replied, "But I can't write anything! I'm just not good enough." He said, "That's OK, we probably don't need you for anything. I just need a ride home."

Despite his remarks, I put together a small article and showed up the following Wednesday at 7 P.M. As luck would have it, the friendly editor was impressed. He smiled and said, "This is great!" It was the first time anyone had said anything of mine was great. My self-esteem was on the rise.

I showed up to the next production night with another article. The editor laughed hysterically. "Do you really think it's funny?" I asked.

He replied, "Oh, no, this is a piece of garbage," as he crumpled it and tossed it in the trash. "But, hey, there's lots of other stuff you can do. We need people to type other articles in. We need people to typeset these articles. There are lots of things you can do."

I looked at him and suddenly realised that mathNEWS nights are fun. I had met a lot of interesting people. I had eaten a lot of free pizza (the traditional mathNEWS staffer's dinner). And, above all, I had gotten involved in the production of one of the greatest publications of all time just by showing up one Monday or Wednesday night. It was a great feeling, knowing that the following Friday the whole Math faculty would be reading mathNEWS (during their 8:30 classes, of course) and I was a part of the reason that it could happen.

Well, that's my story. Thanks to mathNEWS, my life has now a purpose! This can happen to you, too, so remember: Come out to a mathNEWS night!

## Campus Media

The University of Waterloo, as one of Ontario's largest universities, has its share of on-campus media. The campus radio station is CKMS-FM 100.3, an alternative radio station which thrives on volunteer DJ's. If you thought CFNY was unpredictable, you've never heard CKMS.

The University also has a large selection of newspapers for your perusal. They're all free (once you take into account that some of them come from the fees that you pay), so unless you've refunded your MathSoc and Imp'tint fee, feel free to pick up a copy of any of these.

*Imprint* (a.k.a. Imp'tint) is the official student newspaper on campus. It is loaded with opinions, advertising, record reviews and some campus-type news. It appears late Friday morning at various places on campus.

The *Gazette* is the University administration's newspaper. This paper comes out every Wednesday and contains articles of interest to the University community. It takes a generally conservative or skeptical view of things, except when dealing with things that the administration is gung-ho about. The best part

about the paper is the Notebook section with one-paragraph tidbits of things (watch for mathNEWS excerpts).

mathNEWS (what you're reading now) is funded by MathSoc and presents an interesting mix of information and humour in a magazine format. mathNEWS comes out on alternate Fridays, usually before 8:30 classes, so you can pick it up and read it in calculus. People have called us the best paper on campus. Find out why. It's because they're on acid.

The Engineering Society produces a bi-weekly newspaper called the *Iron Warrior*. This is a generally serious paper containing articles of interest to engineering students and math students taking engineering electives. They deliver bundles to the MC and DC whenever they come out. A pretty good paper.

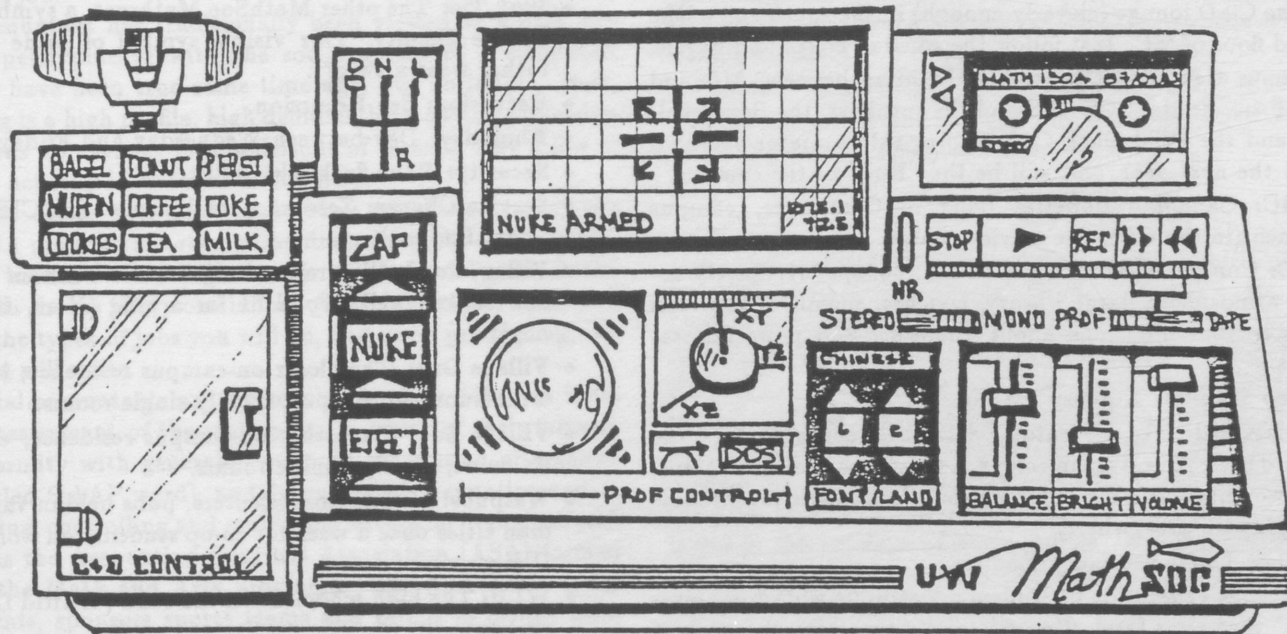
Occasionally the Science Society or the Arts Society gets its act together and publishes its respective newspaper (*Opus* and *The Arts Sphere*). Halley's Comet returns slightly more often than these papers are published so don't hold your breath.

Enjoy the reading. It's a great break from classes.

# The Prof Control Panel

Mark XLII

The University of Waterloo will be installing the *new* Prof Control Panel in various desks throughout the university on a trial basis in order to try to improve class attendances. Here is a brief excerpt from the operator's manual accompanying each panel.



- **Prof Eject Button:** For that boring part of the lecture when you just want to send the prof through the roof.
- **Prof Nuke Button:** Similar to the Eject Button but with a more dramatic mushroom cloud effect (usually takes out the first two rows of keeners as well). Radiation suit not included.
- **Prof Zapper:** A quick charge of 500 000 volts can easily tell a prof to get on with the lecture.
- **Prof Volume:** Allows you to sit in the front without shattering your eardrums, or to sit in the back and still hear the prof.
- **Prof Rewind:** Time warp back to an earlier point in the lecture.
- **Prof Fast Forward:** Comes in handy when the class is only halfway through and you're late for dinner.
- **Prof Brightness Control:** To reduce the effect of those fluorescent Friday ties.
- **Prof Record:** Lets you (re)view the lecture in the comfort of your own home. The Panel automatically selects a premium or cheapo tape, based on the quality of the lecture.
- **Prof Stereo/Mono Switch:** Changes professor's voice from a monotonic drone to a high-pitched whine with spurious glitches. If the prof is Shannen Doherty, this switch has no effect.
- **Prof Noise Reduction:** Eliminates extraneous proofs, redundant lemmas and useless anecdotes.
- **Prof Balance Control:** Allows the student to adjust the lecturer's theory vs. practice ratio.
- **Prof Language Select:** Choose one of Chinese, Czech, Farsi, Swahili, Esperanto, Basque or Pidgin English.
- **Prof Font Select:** Choose from a gallery of blackboard fonts: Greek, Hebrew, Zapf 'Dingbats', Bodoni, Old English or Cyrillic.
- **Prof Gear Selector:** Choose 'D' for normal lecturing, 'L' for low-gear grinding through DE's, 'R' for "if and only if" proofs, or 'N' for catching your breath after an exhausting example.

## The Frosh Dictionary

*A list of terms you may wonder about*

- **Arts Library (Dana Porter):** The main campus library, the big sugar cube at the centre of campus. According to legend, it's slowly sinking due to the weight of its books.
- **Bombshelter:** The original campus pub and party place, a great alternative to Fed Hall, serves pizza for lunch.
- **C+D:** The MathSoc Coffee and Donut shop, a food bonanza full of ice cream, caffeine and pastries at good prices. A great place to get lunch when you still have money. Located in the C+D lounge (cleverly enough) in the south end of the third floor of MC. Just follow the smell of coffee and bagels.
- **Campus Centre (CC):** Student building between MC and the PAC. Houses SCOOPS and the turnkeys, the Bombshelter and the Wild Duck Cafe. Going into a major overhaul over the next year, and will be the "Hub" of the campus.
- **CIBC:** Canadian Imperial Bank of Commerce, campus branch (in the CC). See service charge.
- **CSC:** Computer Science Club. MC 3036/3037. Lively social atmosphere, large library, couches, members that can answer your questions about *anything*, and powerful staplers.
- **Co-op Student:** A gypsy with books.
- **DavisWorld:** Like the Eaton Centre with computers, DavisWorld is an adventure in colour, a twisty maze of tiny rooms, no two alike. And don't forget about the magic mushrooms popping up everywhere.
- **Endless Loop:** See Loop, Endless.
- **Feds:** The Federation of Students, a campus-wide "organisation" that aims (and often misses) to represent the student body. Has useful services like SCOOPS and a cheap bus to Toronto on Fridays.
- **Fed Hall:** The biggest student pub in the Commonwealth. Serves lunch during the day, and parties at night. Worth getting out to see. It's noisy, but you'll love it. It's open to all UW students, regardless of age.
- **Fed Hall Bouncers:** Big like tree, smart like rock.
- **Guelph:** The sound a dog makes as it tosses its cookies.
- **IMP'TINT (Imprint):** Preprinted birdcage liner, shipped in bulk on Fridays.
- **Loop, Endless:** See Endless Loop.
- **Math:** Your new Faculty, a great place for learning, meeting new friends and generally enjoying a productive and all-too-brief university career.
- **mathNEWS:** What you're reading now. Math's student newspaper, a bastion of humour, bad puns, a little math, and even less news. Run by student volunteers.
- **MC:** Home. The Mathematics and Computer building, located at the north centre part of campus. It's big, grey and cubic. A block of ice in the summer, toasty warm in the winter.
- **MC 3038:** MathSoc's office, the place to go for social information, photocopies, and copies of old midterm exams.
- **Natural Log:** The *official* MathSoc Mathscot, the symbol of our society, essentially a laminated log but we love it anyway.
- **Needless Hell:** (also Needles Hall) a place (and a thing) all co-ops pass through.
- **Oxymoron:** Any set of words with a self-contradictory meaning. Classics include Postal Service, Good Morning, Civil Engineer, and Village Food.
- **Pink Tie:** The other MathSoc Mathscot, a symbol also used by the Faculty. Our visible symbol of pride (would you rather wear a twig?).
- **Recursion:** See Recursion.
- **Rhursday:** Day between Wednesday and Friday at UW.
- **Security:** Have flashlight, will travel.
- **Service Charge:** Zero account balance. See CIBC (also see Loop, Endless).
- **Village Food:** Illustrates the difference between well cooked and cooked well. Food fit for a king (Here, King! Here, boy!).
- **Village One:** The closer on-campus residence, laid out like a medium security pen, mostly single rooms.
- **Village Zoo:** The other on-campus residence, deserving of its name, mostly double rooms.
- **Watpubs:** Mobile Bombshelters, pubs held in various Canadian cities once a week for co-op students on work term and UW alumni.
- **WLU:** The high school down the road (Wilfrid Laurier University).

## Phone Numbers You May Need

To call a University extension, dial 885-1211 (during business hours) or 888-4567 (any time), and transfer to the extension you want.

<i>Emergency</i>	911	
University Security	ext. 4911	888-4911
University Switchboard	885-1211	
University Direct Dialing	888-4567	
Health and Safety	ext. 3541	
Math Society Office	ext. 2324	888-4779
Computer Science Club	ext. 3870	
Counselling Services	ext. 2655	
Co-op Co-ordination	ext. 4026	
Kitchener Transit	741-2525	
Gray Coach	741-2600	



## Math Faculty Programs

### *Accounting*

The president of a large corporation was interviewing three candidates, an engineer, a lawyer, and an accountant for a vice-presidency in the corporation. The president called in the engineer and asked him: "What is  $2+2$ ?" The engineer replied "4" and the president dismissed him. Next the lawyer entered, and was asked the same question. He also replied "4" and was dismissed. Finally, the accountant was called in. When asked the same question, he replied: "Whatever you want it to be." He got the job.

The accountant has traditionally been viewed as a dull, humourless pennypincher with the social graces of a computer. This may have been true some time ago, but no longer. Now, accounting is a high profile, high demand, high paying profession which opens up avenues to a multitude of careers, only a few of which are actually in the accounting field.

The first choice you must make once you have entered the MATH/CA program is between the financial (CA) and managerial (MA) branches. Although there is very little difference in the courses you choose (Only one in four years), the major difference arises in the types of jobs you will do, and upon graduating, the exams you will write.

Financial accountants are responsible for "providing an independent assessment of the statements in terms of their fairness and conformity with generally accepted accounting principles" (the dreaded GAAP word), and management accounting assists in "planning, controlling and evaluating within an organization."

There is the Accounting Students Association (ASA) formed by both the Math and Arts programs. The ASA holds many social events, sponsors sports teams and brings in people from the accounting field.

The MATH/CA program is not an easy program. You need good marks to get in and to stay in. But, if you want to write your own ticket once you graduate, this is the way to do it.

### *Actuarial Science*

"I'm going to be an actuary."

"An actuary? What's that?"

This is an exchange that is repeated many times during an Actuarial Science (ActSci) student's life. Even though actuaries are essential, well-respected professionals, not many people know what they are. Basically, actuaries use probability and statistics to place a price on a risk (an event that may or may not happen). This sounds simple, but there is a huge background of knowledge an actuary must have in order to do this accurately. To this end, a practicing actuary must have a professional designation given by the Society of Actuaries, Canadian Institute of Actuaries, or Casualty Actuarial Society. This does not mean that you can't get actuarial experience without one; you will be considered an actuarial student if you are actively writing the professional exams that lead to your designation. These exams are over and above any school exams, and take several years to complete.

Actuaries and actuarial students have traditionally worked in insurance companies or pension consulting firms. However, non-traditional jobs in banks and other financial institutions are becoming increasingly common. The job market for actuaries was

saturated a few years ago, which created problems for graduating students. The situation is slowly but surely getting better. In co-op, you're unlikely to get an actuarial position in first year. However, other fields in math will provide excellent background experience that will be useful in actuarial jobs in later terms.

The workload in ActSci is not light, but not extraordinarily heavy either - unless you're writing professional exams during a school term. The exams are held in February, May, and November, and usually you don't see your friends much for several weeks before the exams. ActSci courses are heavily based in probability and statistics, and become so specialized by third year that your non-ActSci friends will have no idea what you're talking about.

ActSci is not easy and is not for everyone, but if you like the material and work and can last out the professional exams, it's an extremely interesting and rewarding career.

### *Applied Math*

Applied mathematics is the study of mathematical methods for solving physical problems. While this may sound a lot like engineering, there is a crucial difference. Engineering concerns itself with the actual physical problems and seeks to find quantitative answers to those problems: applied mathematics is concerned with the mathematics involved in finding those solutions and seeks to further knowledge about the mathematics, or to discover new methods of solution. An applied mathematician must be able to 'stand back' from his solution and see where it fits in the universe of mathematics. Applied mathematics is thus a bridge between the mathematical world and the physical world. Despite the difference, there are strong ties between applied mathematics and the world of engineering and the natural sciences, and much overlap. Many graduates of the applied math program go on to work in engineering or the natural sciences, especially in the theoretical aspects.

Applied math is full of differential equations: one may even say that applied mathematicians are partial to differential equations. If you don't know what a differential equation is, don't worry. You will see more than enough differential equations in your applied math courses to learn what they're all about, and see how useful they are in describing physical phenomena.

If you find the physical world to be an interesting place, and like to look at it from a mathematical perspective, then applied mathematics may be the program for you.

### *Business Option*

The Business Administration option offers the following courses during your four years at University: Financial/Management Accounting, Introductory Business, Marketing, Micro/Macro Economics, Business Law, Managerial Finance, Managerial Science, Personnel Management, and Business Policy. The Business option is an excellent education to gain because it opens a lot of doors for interesting and challenging jobs upon graduation in a business world which is growing and has need for mathematically inclined business graduates.

In first year, you will be required to take BUS 111/121 and ACC 121/122. You can also, in first year, take other Business

## profQUOTES

*The Best of the Best of the Best*

It was only nine years ago that the first profQUOTES were submitted, but they're arguably the most popular feature in mathNEWS. The definition of a profQUOTE is something that an actual prof said in an actual lecture which is insightful enough, ambiguous enough or just plain funny enough to make it to print in mathNEWS. All profQUOTES are submitted by students (don't forget to submit yours!).

Watch for profQUOTES in this, and every other, issue of mathNEWS!

"I noticed I was quoted in your mathematics newspaper... if the person who submitted that would step forward, I will give you your 'F' right now."

J. McCutcheon

"What we usually do is write this as  $4 = \frac{1}{2}$  so that the freshmen coming in next class will drop out."

K. Rowe

"Set X is women. Set Y is men. The problem is to match men to women in order to make the women happy. The men don't have a say in it. This is called the Marriage Problem."

A. Bondi

"Matrix comes from the Latin word meaning 'mother', so when I point to a matrix and say 'This mother!' you'll know what I'm talking about."

L. Dickey

"How many people go around memorizing the negative binomial distribution?... then you're a nerd. Get a life!"

C. Cutler

"You know I've been taking antihistamines and wheeee! you're way out there!"

Hultin

(after giving a midterm) "...If any of you feel the need to buy me a beer afterwards, I'll be in the Bombshelter until 12."

K. Frackleton

"Problem #62 involves two people in motion in a canoe... No, it's not that kind of problem."

P. Eastman

"This is one of those limits that says, 'Divide me in two and do me from both sides!'"

J. Wainwright

"When a child begins to form sentences, he sometimes gets the words wrong. For example, 'Me eat'. Now, occasionally he'll reverse the word order... I didn't mean to say that."

P. Eastman

"The midterm will cover chapters 1 through 7. For those of you in Arts, that's chapters 1, 2, 3, 4, 5, 6, and 7."

P. Eastman

"I've mixed things up here, obviously, and you should be confused, and if you aren't confused then something is wrong. But if you are confused then things are OK because you should be."

L. Cummings

"Please don't throw things at the wastebasket. You're going to start a war in here and then we'll get people throwing paper airplanes. That's for algebra, everyone knows that."

Anonymous

"Ever wonder how to measure the inner radius of a doughnut? You whip out your handy-dandy six-inch."

Anonymous

"I could go up on observer 1 or go down on observer 2... let me rephrase that... I didn't say anything... if I see that in mathNEWS..."

R. Oldford

"I'll just put my 'but' here... it's a very big 'BUT'... no comments please."

P. Ponzo

"If you don't do this, you're — what is the word when you do badly — you're toast."

J. MacKay

"Why is what I've written there true? Well, what I've written there isn't true, so I don't have to answer that question. However, having said that, there must be some reason why I wrote it."

D. Taylor

"I said you couldn't be smooth and kinky at the same time, then somebody put up his hand and said, 'What about whipped cream. sir?'"

J. MacKay

"Then someone comes up to you and says, 'use the Cauchy-Schwartz inequality, Luke.'"

C. Cobourn

"You can bring any calculator you want to the midterm, as long as it doesn't dim the lights when you turn it on."

G. Heppler

"If my wife's giving me a hard time then you'll all fail."

J. Baker

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courses mentioned in the Undergraduate course calendar. BUS 111/121 are introductory business courses which are taken at Wilfred Laurier University and ACC 121/122 are Financial Accounting and Managerial Accounting.

All BUS courses will be taken at Wilfred Laurier University. The grey building called the Peters Building on the corner of University Avenue and Albert Street is where all the Laurier Business courses are taught. Non business students are always asking me how I can handle the long trek to Laurier all the time. First of all you get used to travelling to Laurier all the time for your classes. Secondly it really isn't that far. In your first month or so, the distance between Laurier and U of W will shorten up. The Peters building is probably the closest building on the Laurier campus to the U of W campus. In some cases you will have only ten minutes to get from U of W to Laurier or vice versa, but this amount of time should be adequate if you don't dilly dally. Most people walk but Laurier is equipped with bike racks and parking lots if you choose other methods.

So, if you are looking for a program that is both challenging and extremely interesting, then choose the Business option.

### *Computer Science*

(See the article called *CS or Not CS* on page 14)

### *Combinatorics and Optimization*

Explaining what C&O is all about is quite an undertaking. Your best bet when trying to explain it to your parents is "It's just math, mom." However, we can't get away that easily. Waterloo has the first C&O department in the world. C&O is certainly more than 'just' math.

Combinatorics is a diverse field, involving many subject areas. The first two you will encounter (in C&O 230) will be graph theory and enumeration. Graph theory deals with ways to solve problems through pictorial methods. Transportation problems, organisational models, computer science algorithms and more can be studied through graph theory. Enumeration is counting theory, dealing with ways to combine items or form patterns, from something as mundane as making change to highly esoteric theories.

Optimization is the modelling of problems, subject to boundaries and constraints, to yield the best possible solution. The practical upshot of this is that optimisation methods, such as linear programming, can be used to predict and account for bridge stresses, to optimize factory floor space and to produce 'best fit' solutions to many complex problems with large numbers of variables.

C&O has long been a special part of Waterloo. The discipline has only developed fully in the last hundred years, and a large part of the work has been carried out by UW faculty. The many areas for research and rapidly broadening horizons of C&O make it one of math's most interesting departments. We may not know how to explain it, but we're sure it can be well worth investigating!

### *Inter-Departmental Math*

Okay, it's a question that everyone asks. What is a Non-Specialist? Well, it's not someone who can't do anything in Math; rather, it's someone who does many things in Math. In

other words, a jack of all trades, and a master of many. Why would anyone want to be a Non-Specialist? Well, not many people want to be a Non-Specialist but they become one by default. No other major interests them, so they don't major in anything. Others just can't decide which area of Math they like best so the Non-Specialist program allows them to sample from every program. Or there's also the person who is in between majors and manages to find a home in the Non-Specialist program temporarily. Doesn't it sound like fun?

The NS program is probably more difficult than even the CS major program as there is such a wide variety of topics that are covered. Not only do you have to know how to program in Assembler (CS 230), but you also have to know how to solve first order differential equations (AM 250). Of course, there's everyone's favorite—C&O 230. And there's exposure to many of the higher maths, including Geometry, Real Analysis, Complex Analysis, or, if you're a true glutton for punishment, there's always Calculus 4.

A great advantage to the NS program is that you have the freedom to minor in another faculty while you're at it. Perhaps you have a penchant for Philosophy, or Psychology, or perhaps Russian. You have the freedom of picking whatever electives sound interesting. But, remember, once in NS, you can't have a Minor or Joint Honours program within the Faculty of Math, but any other faculty on campus is okey-dokey.

Convinced yet to become a Non-Specialist? No? Well, let's see... what else would make you want to be a NS? My favorite reason is so that I can gleefully taunt those CS majors who are sweating over a 60 hour CS assignment. Probably the biggest reason to become a Non-Specialist is that you get a wide variety of Maths and the opportunity to become friends with everyone from every other major. So remember, Non-Specialist is the place to be!

### *Teaching Option*

One of the biggest complaints I hear from students is that whenever they tell a layman that they are in Math, that person asks if they want to be a teacher. Well, some of us actually do want to teach when we graduate, and the Mathematics Teaching Option is the best way to earn your degree and teaching certificate. The program begins in 2A when you go through a set of interviews before you are accepted to the Option. If you are accepted, your stream changes drastically, and you flip between 4 and 8 stream people constantly. Also, you lose a work term but you gain a 4 month term at Althouse Teacher's College at the University of Western Ontario. The reason for the reduced time at teacher's college is that the last three work terms are spent in a high school (or possibly a senior public school) classroom, and by the last teaching work term most students have a full teaching timetable. In other words, you will have 12 months classroom experience and a Math degree. Boards of Education will be knocking down your door to hire you.

The best part about Teaching Option: You get up to 4 Summer School terms.

The worst part about Teaching Option: The salaries are incredibly bad (worse than CA's). If you want money go into Actuarial Science.

Least known fact: You can graduate from Teaching Option by completing any other Undergraduate Major requirements instead of the Teaching program.

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"I never have to remember that formula; I don't have to write the final exam."

P. Hoffman

"It's not my fault that 20 years ago your parents couldn't find a drugstore that was open."

L. Smith

"Sequences and series aren't that tough. All you need is a bottle of scotch and an hour."

P. Ponzo

"Pure mathematicians have wet dreams over this stuff... don't quote that in mathNEWS; I'm in enough trouble already."

I. McGee

"I looked at the Final the other day and I'm happy to see that we covered some of the material."

C. Cutler

"Why do people laugh whenever I ask how the midterm went?"

Anonymous

"I don't like giving out extensions, but I don't like lynch mobs either."

C. Durance

"I'm sure you stand at home in front of the mirror practising that look — that look so that the prof can't tell what you're thinking or whether you're thinking."

J. MacKay

"If that makes sense to you then you have a big problem."

C. Durance

"Don't ask me why I've done it. That's irrelevant."

F. Goodman

"I'm tired. I wanna go home. I don't wanna play school anymore."

Anonymous Student

"For an engineering student a calculator is the breath of life. Take it away from them and it reduces them to stammering idiocy."

Anonymous

"When I first started teaching engineering here, they told me to give the engineers a very hard assignment during the first week of classes just to shock them, to set the tone for the rest of the term. 'Better yet,' I asked, 'why don't I just kill a couple?'"

Anonymous

"I take the Christian attitude toward exams... it is more blessed to give than to receive."

R. Wentzell

"Let me do this in a more confusing way because it will probably help you to understand."

L. Cummings

"Has anyone got a headache yet? It's going to get worse."

M. Best

"'Strong Typing' does not mean pounding the keyboard."

F. Burkowski

"Suppose we're in hell. and we have square pool balls..."

Morrison

"Hold the beer in one hand, the textbook in the other hand, and then you'll become the god of probability."

K. Ravindram

"Nagging is a form of negative reinforcement. 'Take out the garbage. Take out the garbage. Take out the garbage.' Sometimes I have to say it 4 or 5 hundred times before she'll do it."

Cameron

"Please keep your eyes on your paper. If I catch anyone cheating, I'll do the worst thing possible... tell your mom."

J. Rempel

"No, you're wrong. Move to the back of the room."

S. Vanstone

"You people do this great! You look like you're interested, but I know you're not."

S. Vanstone

## Writing the ELPE

The ELPE is the English Language Proficiency Exam. All first year math students who did not get at least 80% in OAC English must pass this exam once before enrolling in Year 2 (in other words, pass it before you register for 2A).

What do you have to do in it? Well, you have to write an essay which is based on a quote that you are given. The content of the essay is not important, the english, however, is. To put it bluntly, you have one hour to bullshit in the Queen's english (eg. in the year I wrote the ELPE, a friend of mine had to write on "Good fences make good neighbours", and ended up writing as if he were a thief and his neighbour was a "fence" for stolen goods — not what the phrase meant, but was quite good, grammatically speaking, and he passed). But, don't worry if you don't pass it the first time, you have one more chance in December to pass it.

Now, when you graduate, you will be able to leave here and say, "Four years ago, I couldn't spell 'mathematician'; now I are one."

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### Pure Math

Let me tell you what Pure Mathematics is. It's abstract algebra: groups, rings, fields, commutative and non-commutative. It's analysis: advanced calculus, measure and integration, and topology. It's number theory, and it's logic. It's even geometry.

Now let me tell you what Pure Mathematics is. It's mathematics done for its own sake. That doesn't mean it's mathematics without an application; every field of pure mathematics I mentioned above has had a range of applications from Fourier Analysis to the RSA encryption algorithms that have arisen out of number theory. But what it does mean is that pure mathematics is the leading edge of mathematical research. The abstract mathematics of today often becomes the very practical computer algorithm or engineering tool of tomorrow.

Now let me tell you what Pure Mathematics is. It's for students who enjoy doing mathematics. It's also for students who want to understand the tools they use rather than just use them. Yes, it's for students who are considering graduate school - Pure Math has been used as a springboard from everything from mathematics research to law school. But it's also for students who want to become "well-rounded" and may want to impress an employer someday with how well they can think and learn, not just how well they can find the area under a curve.

If you decide to major in Pure Mathematics, you won't regret your choice. Some of the most fascinating aspects of mathematics can be found in the courses in this department. And beyond the mathematics itself, Pure Math can teach you how to tackle problems more effectively and communicate the solution to others once you find it; both skills will serve you well through your entire life. You'll find it a challenge, certainly, but I think you'll find that the challenge is worth it. And who knows, you may find you enjoy mathematics after all.

### Statistics

By the time they graduate from high school, 99.9% of all Canadians have seen enough uninteresting and useless statistics to be skeptical of any politician that trots out a few numbers to bolster her/his argument. This is a good thing. Healthy skepticism is a fundamental attribute of a professional statistician (unlike say your favourite sportscaster who after examining the entrails of countless tabulations merrily predicts all sorts of things). Statistics is that branch of the mathematical sciences which focuses on the development and correct application of the scientific method. The statistician is concerned with answering questions such as: what data need to be collected; how should they be collected to provide efficient, reliable answers to the questions of interest; how can a mathematical model which describes the process that generated the data be described, and verified; how can the data be summarized and presented clearly; what conclusions can be drawn from the data and what is the degree of (un)certainly of these conclusions; what actions should be taken and what are the predicted consequences of these actions; do the data provoke questions which might be addressed by a future study?

The range of applications is enormous: from the predictions of the onset of AIDS for a given individual to determining of the best marketing strategy for a given product; from the reconstruction and recognition of images produced by computer-aided tomography to the improvement of product quality in a manu-

facturing process. Statisticians are called upon to participate in research areas from anthropology to zoology.

Statisticians need a strong mathematical background, especially in probability theory, and use a variety of mathematical and probabilistic models in their problem solving. Essential to this problem solving is the computer: to perform the sometimes complex calculations necessary; to access and deal with large data bases; to graphically display complex aspects of the data and the mathematical models in a simple informative manner; and to provide a laboratory for simulating random phenomena that are too complex to deal with analytically.

Your training in Statistics at UW can provide you with the necessary tools to attack a wide range of mathematically and practically significant problems. For a start you would question the validity of the first statement in this description.

## Extra-Curricular Organizations



Computer  
Science  
Club

A Student Chapter of the ACM

*Computer Science Club*

Greetings, fresh new students! You're about to start a new stage of your life, and you've started off with the right choice (mathematics). Whether you're heading for the fame and glory of computer science, or for the glory and fame of applied math, or the glorious fame of pure math, the CSC is a resource you will be familiar with.

The first thing you will notice are the people in the office: always willing to help with questions you may have about computers, or to loan you the stapler. Two couches and comfy chairs make it a cozy place to sit and idly discuss current technology or events. We also have two computers all to ourselves (a SUN SparcServer and an 80386 running Linux OS), with connections to the Internet. For only \$2 you can get an account on "calum," our computer, and be able to try out your non-coursework projects. The other computer, "doctor," was a club project in spare parts and homemade electronics (right now it's wired to the doors and the lights, soon to be the first stapler on the Internet!).

Every term we have some of the biggest names in modern computing and information science come to share with us their ideas, and give us (and you) a chance to ask questions. In July, we had Bjarne Stroustrup come and tell us about how he designed and implemented his creation, the C++ programming language. When famous people aren't coming to us, we make our own fame. Every fall we host the International Othello Contest (only computer programs may enter), and the winter is time for our teams to win the International ACM Programming contest. Ask us to see the trophy from last year.

Every September we have Siggraph Night: the year's best in computer graphics and animation. Memberships are available for \$2, which gives you borrowing privileges, the account on

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## CS or Not CS

*"I know software verification sounds a lot like Computer Science, but I don't want a Computer Science major. I want someone who can think. I want a math major."*

- an anonymous corporate recruiter

Now that you've been accepted into Math, you may think your decisions are over, but they've just begun. If you haven't already done so, you'll soon have to choose a major. One of the most popular choices is Computer Science. Typically, of the roughly 800 Math Frosh (this means you) entering the University of Waterloo's Faculty of Mathematics, fully half intend to enter Computer Science by their second year. Why is Computer Science so popular? What about the other departments?

For many people, computers were fun and programming came easily in high school. Others feel that in an increasingly technological society, it is necessary—even vital—to become part of the "computer revolution." Still others look to CS because of the apparent glamour and the lucrative job field.

Mathematics, on the other hand, is a labour of love. There is no apparent glamour for a mathematician. People study mathematics because they enjoy studying it, working with it, thinking about it. Many who enter Math at Waterloo without the intention of entering CS are steered here by advice from older friends or enlightened teachers.

What does it mean, both for Computer Science majors and for other Mathies, to have Computer Science and other Mathematics courses so strongly interrelated?

Since the theory of computing is mathematical in nature, CS students take mathematics courses. If they're good at math, they'll be good at the analysis and problem solving needed for higher level computer science jobs, like Systems Analysis. CS majors at UW are not taught specifically how to program, rather how to solve problems and what tools to apply.

In the first one and a half years of study, most honours programs have a basic similarity. By the end of first year, all Mathies know everything that they need to know about programming. Like all Mathies, CS students will be exposed to calculus, algebra, statistics and subjects of that ilk. The required Math courses in CS programs are intended to provide a basic grasp of the tools and methods of each discipline. Not only does this provide a future analyst with a solid background, but it gives CS majors, who may decide to leave the program, exposure to the wide range of mathematical fields available.

By third year, most programs have diverged radically. CS majors may opt at this point for a less mathematically-intensive program (or more so, if they prefer.) All Math programs become more flexible after the first couple of years, allowing for specialisation and interest-oriented study.

Every Math student benefits from CS courses through the resources they make available for study and research. With basic computer knowledge common to their classes, professors can employ the computer as a tool to let students apply the theories they have been studying. More realistic problems can be explored without using contrived examples where every step has an integer result. One does not have to be a CS major at UW to learn how to use computers productively.

The Computer Science program at UW is intended to produce analysts, not merely programmers. People who only want to learn to program should *not* be in a CS major degree at UW,

but in CS at a community college. These institutions provide solid programming skills, but few of the tools needed to progress beyond coding jobs. The many Math courses that UW requires are not required there. A more in-depth education aimed at a DP management job or a job at a senior programmer level can be obtained at places like UWO. Beyond that, it is often the Waterloo-trained analysts and problem solvers, for whom coding is a tool used to accomplish a task, who progress.

Professionally, Waterloo Mathies (and even engineers) work well together. Thanks to the interrelated programs, CS grads can work with actuaries and statisticians and applied mathematicians with ease. This ability is denied many others in the CS field.

These are some of the reasons why CS and Math are so closely tied, and why CS majors must take the common Math core courses. UW wants to produce thinkers, not merely doers. Waterloo CS grads do not stay coders for long, but move into the thought-work areas of business as computer science applies to them.

At Waterloo you will be exposed to all the options of mathematics. Computer Science is an exciting part, but not the only area of interest. After all, mathematics has been around for millenia. The classic outsider view of mathematics as boring is far from accurate. The knowledge that there is always more to discover makes it exciting for both the dedicated researchers and the professionals for whom mathematics is a toolkit. Now and in the foreseeable future mathematicians will be developing the ideas that lead to discoveries in science, engineering and humanities—for mathematics is not just a science or technology, but a philosophy as well.

CS is certainly an excellent program here, but only one program among many, all of which are valuable and fun. Bear this in mind as you travel through your years here, and be open to new ideas. The Waterloo BMath is a document which signifies the bearer's ability to reason, to think as well as to do, and to program, no matter what discipline the major reflects.

## Co-op And You

Welcome to Waterloo, home of one of the best co-operative education programs in North America. This system will be affecting you for the next five years, if you are in co-op.

**Stream 4 vs Stream 8:** The first big question is just what are the two streams? No matter which stream you choose you will have to do eight straight months of school at some time. An associated question is whether you want to do it during first year or fourth year.

Some people prefer Stream 4, which goes eight months straight in fourth year. The advantage of this is that you start earning your co-op money sooner and you can waste all of your high school earnings in the first four months. Others prefer Stream 8, which goes eight months straight in first year. The advantage to this is that you get it out of the way and when you graduate you have a better chance of getting a job with your last co-op employer. The choice is yours (except for some programs). When it comes down to it, it really doesn't matter much.

**COOP 000:** This next sentence will teach you everything you need to know about co-op. *Attend your co-op orientation*

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"calum," and you get to use the members-only stapler. Join the ranks of hackers, net-surfers, gurus and cyberpunks.

### Actuarial Science Club

The ActSci club, located in MC3030, provides many useful services for ActSci students. We have a library of study materials, including Actex study guides for the professional exams. We arrange talks and panel discussions by people involved in ActSci. Past speakers include the Society of Actuaries president, the Canadian Institute of Actuaries president, visiting professors from Europe, and actuaries working in different sectors of the industry. We are affiliated with the Actuarial Students' National Association, which brings us into contact with actuarial students from across the country, and which holds a major convention each year in either Ontario or Quebec.

We do fun things too, like Blue Jays roadtrips, softball games against other clubs, basketball and volleyball games, tours of local points of interest, and end-of-exam/end-of-term parties. These are usually open to all students. You can find students in the ActSci club office who can answer questions you might have about the program at UW, or the professional designations. Feel free to stop in!

### PM&O Club

So you've applied to the mathematics faculty of the University of Waterloo. Do you actually enjoy math or is it just something you're going to do to get a degree? If you like number and logic puzzles, writing math contests, or have ever studied a mathematical concept for the enjoyment of it, the PM&O club is for you.

The Pure Math/Combinatorics and Optimization Club has many services which it offers its members. There is a club room where members can meet to socialize. There are many contemporary mathematical journals and reference books available for your reading pleasure. Perhaps best of all, there are usually smart upper year students there who are more than willing to help explain and discuss difficult concepts.

The PM&O club also holds frequent entertaining and informative talks on mathematical theory. You'll soon come to realize that math lectures can be boring, but math talks are stimulating and fun. The club even provides free pop and donuts at the talks.

The PM&O club also has numerous social events such as barbecues, pizza parties, Stratford road trips, and baseball and field hockey games.

You don't have to be in Pure Math, or C&O, to join the PM&O club. We have members from all of the various math department. You don't even have to be good at math to join the PM&O club. All you need is to be social, outgoing, and able to derive some enjoyment from mathematics. If you can't enjoy mathematics at all, what are you doing in a math program? (*I don't know about the rest of you, but I'm here for the beer and chicks. -Ed.*)

### Other Math Clubs

There are also clubs for Applied Math students, Business students, and Teaching Option students. Why don't they have articles in this issue? Ask them. They didn't submit any.

### Campus Rec

Campus Recreation is ...

- the largest student employer on campus
- full of job and volunteer opportunities
- free to every student
- archery, windsurfing, fencing & kendo, badminton
- co-rec broomball, volleyball, slo-pitch
- competitive basketball, hockey, soccer
- loaded with individual activities
- a place for relaxation, good time, and friendly people
- fun, fun, fun
- yours to enjoy!!!

Get yourself a copy of the campus recreation brochure and be sure to get your term off to a great start!!

### FASS

Do you want fun? Do you want frolic? Do you want good times? If your answer to any of these questions is yes, then you want to become a part of the longest running, most outgoing group on campus: FASS.

FASS is made up of Faculty, Alumni, Staff and Students; almost everyone falls into one of these categories. Having so fallen, pick yourself up, dust yourself off and proceed to your local FASS meeting.

Every year FASS members get together to write and perform a musical comedy spoof of life at UW and life in general. It doesn't matter if you have never been in a play before or if you have a terrible case of stage fright or cannot sing a note: FASS has a place for everyone.

FASS needs actors and non-actors. There are a lot of other folks who are part of FASS and are never on the stage. A large support crew is needed to scrounge props at local garage sales, find costume bargains at used clothing stands, build sets and help write the script.

The script has been in the works for five months. Writers' meetings will be approximately twice a week. The call for cast and crew is in the first week of January. The show runs for four nights (five shows) early February to an audience of hundreds.

Watch for posters announcing FASS meetings early in the term. Check the Imprint, Gazette, and mathNEWS lookAHEAD for more details.

### Other Things

There are many many more clubs on campus that you can get involved in. For those interested in playing games, there are clubs for Scrabble, Chess, Go, Bridge, and Role-playing games. For those interested in politics there are clubs representing a variety of views from the very radical to the mainstream. As well, there are a host of organisations on campus that you can get involved in, including MathSoc, the Federation of Students, the Women's Centre, GLOW (Gay and Lesbian Liberation of Waterloo), or uncounted others.

Whatever your tastes, there is probably something for you! So look around when you arrive. Get involved! University isn't only about learning, it's about making friends.

## Problem Solvers

*Where to go for help*

University is going to be a new world to you and with it comes new problems to be solved (calculus assignments excluded). Here's an article to show you where to go and who to ask when these problems arise.

The first problem solver you will encounter will be your big brother or big sister. Once upon a time, they had the same questions answered for them, probably by their big brothers and sisters. They are willing to help you during and after orientation week. MathSoc is another place to go for help throughout the term. Although the friendly office worker may not know the answer, he or she will probably know where you can find it.

Questions dealing with your courses or future in math are best directed to your faculty advisor. OPERATION MATH-START is set up in room MC 5158 to be your registration and scheduling problem solvers in the first days at school. Starting Tuesday, September 6, MATHSTART should be a necessary stop for all students with problems that should be tackled right away. These professors will be able to guide you through course selections and academic problems a student in the prof's particular field may encounter.

General questions about math and the university procedures are best directed to the Math Undergraduate Office on the fifth floor of the MC building, room MC 5115. They may direct you to the Registrar's Office on the second floor of Needles Hall room (NH 2001), though, if it is a question dealing strictly with the University.

Across the hall from the Registrar's Office is Counselling Services, room NH 2002. Here, professional counsellors will be able to help students with their concerns about school, life, or their futures. The Chaplain's Office in room MC 4002 offers the same type of help in a spiritual manner if you so prefer.

The Ombudsperson is a counsellor of the pseudo-legal variety. He or she is on campus in the Campus Centre, room CC 235, and is approachable free of charge by appointment for any student wishing legal help. The Legal Resource and Landlord-Tenant Offices are also located in the Campus Center. The services they provide are free of charge, and can help you with legal questions as the Ombudsperson would (although the Ombudsperson is better for helping you take legal actions, necessary).

Any question or concern you have can be answered by using one of the services mentioned here, but only you can search them out.

**Make White-Space an  
Endangered Species**

— Write for *mathNEWS* —

## Dropping Out

*Trials and tribulations of a former mathie*

This is a serious article. I don't take my education lightly any more.

In Fall '91 I started at UW in co-op honours math. I assumed that I would do fairly well, and basically cruise through university to my degree. Well, I will eventually get there, but not without some major hurdles.

Distractions can be fatal to a first-year student. I knew in 1A that my marks weren't going to be anything spectacular, but nothing could have prepared me for the marks report I got in January. Out of 5.5 courses, I failed 5. Not exactly a good position to be in, but with perseverance, it would have been possible to pull through until fourth year without dropping out.

Coming back in Spring '91 from my work term, I was determined to do better. So, I resolved to actually do my assignments, and keep working throughout the term. Yeah, right. Summer? Distractions galore, and I wasn't able to apply myself enough to my studies. I failed another 2 courses that term, bringing the total in 2 consecutive terms to 7. If you fail 6 in two consecutive terms, it's up to the faculty. In my case, I was 'required to withdraw.' (Note that the regulations have since changed.)

I looked into transferring into another faculty, but due to the recession and such, all faculties were full. Not even Arts would look at me. I took the requisite 2 terms off school, did the 3 pre-university math correspondence courses on my own, and re-applied to Math. Remember that this is still an administration. In spite of reasonable marks in the 3 courses, I was twice denied readmission to Math, and also turned down twice for a transfer to Arts.

I have since completed first year at a Community College in CS. I came out with an A+ average. However, the faculty seems to think that two chances are sufficient. Mine were 1B and the pre-university courses. Now, nothing I say will convince the administration to give me a probationary term here.

I've learned my lesson the hard way. Hopefully, someone reading this will learn from my mistakes. You can continue making excuses to yourself until you're blue in the face, but you have to answer up to yourself. I did, and I'm no longer at UW. Nor will I ever be. I have been accepted to another university more willing to take a chance on me, and I will have my degree in 4 years.

Based on my results, if you drop out, you won't be back.

- Social events
- Coffee & Donut Shop
- Study rooms
- Photocopiers
- 'Mathwear'
- mathNEWS
- Orientation

**CHECK US OUT!**

Located on the third floor of the Math Building  
MC3038 Phone: 885-1211 x2324



## Can I Appeal My Grades?

*Or: What Happens If I Do Fail?*

Now that you've read *Dropping Out* and *On Failing* (and if you haven't, then go back and read 'em!), what happens if you do actually fail a course here? Well, you're not in high school anymore (how many times have you heard that?), and failing a course at university happens to the best of us. It's not really a big deal, at least, it's nothing to get all bent out of shape about.

**BUT...** sometimes people fail courses unnecessarily. What do I mean? Well, for example, in my 1A term I took MATH 130A (that's what 1A Calculus was called back in the Stone Age; you call it MATH 137/147). I was smoking the course — my assignments were good, I aced the midterm — basically, I was doing pretty damn good in the course. Then after I took the final exam, they mailed me my marks. When I saw my Calculus mark, my jaw hit the floor in shock. I was expecting a mark in the 80's, and I got one in the low 50's. The only way that could've happened would have been to fail the final. I was currently on work term, so I let that mark go as a badly written exam.

What I didn't know at the time, is that you are actually allowed to *Appeal* a course mark. By the time I found this tidbit out, the time limit to do so had expired already. Duh. So here I am telling you this fact before you too have to learn the hard way. If you "know" you should have gotten a better mark than you did, *don't* take the prof's word for it. Appeal it (or at least ask to see the exam). Anyone can look at their exams. It's free, too. If, after you've seen the exam, you believe you got ripped off (a question was marked wrong or added incorrectly, course mark calculated incorrectly, etc), then you can formally Appeal the mark you were given for a nominal fee (I believe it's now \$5 for each grade Appealed, but you may want to verify this when you get on campus).

When you Appeal a mark, you force the prof to re-mark your exam (if that's what you want him to do), or recalculate your mark (if that's what you want him to do), etc. And, get this, if you think your prof has it in for you (ie. gave you a bad mark because he/she hates your guts), you can ask another prof to mark it for you instead! But be warned: your grade could drop!

But in order to take advantage of Appeals, you must Appeal a mark less than 6 months after completing the course (ie. if you're in Co-op, that gives you until the middle of your *next* academic term). How do you Appeal a mark? Just truck on up to the Math Undergrad Office (MC 5115), and tell the friendly people behind the desk that you want to (a) see your final, or (b) Appeal your mark. Is it just that simple? YES! It is just... that... simple (See: Undergrad Calendar, page 13:22; Grade Appeals).

The Math Faculty also implements a system by which you are allowed to *Withdraw* from a course. If you read the Undergrad Calendar (page 13:21, Course Drop Policy), you will know that you may Drop a course within the first 4 weeks of lectures without academic penalty; it will be as if you never signed up for the course in the first place. However, if you miss the 4th week deadline, you may not *Drop* the course any longer, **BUT** you are allowed to *Withdraw* from the course before the 10th week. A *Withdraw* is different from a *Drop* in that (a) the *Withdrawn* course remains on your transcript and assigned a grade of WD, and (b) the *Withdrawn* course counts as a course attempt. Both a *Withdraw* and *Drop*, however, are not counted in your average or your count of credits/failures.

The only catch to using a *Withdraw*? You may only use them between the 4th and 10th week of lectures, and you may only *Withdraw* from *at most ONE* course per term for each of the first three terms of full-time university registration (ie. 1A, 1B, and 2A only).

The info I've given you can be found in the Undergrad Calendar (hmmmm, I've told you that for the 3rd time already, maybe it's important). Look at pages 13:21 to 13:24 in particular. Not only do they explain what I've told you here, but it explains about other Faculty Policies (Academic Standing, Co-op Regulations, Standings and Promotions Committee, Petitions, etc). Read it. Be informed. Don't get caught with your pants down like I did. An ounce of ignorance can equal a ton of headache in the university game. Make sure you don't need any Excedrin.

Curtis "Chewbacca" Desjardins

## On Failing

*It sometimes happens ...*

It's January, 1995. You pick up your first grade report to find that you received a 35% in one of your courses. You have now encountered something that you have probably never encountered before. You have failed a course. If you find yourself in this position, or find that you are failing a course in the middle of a term, remember one thing: It is not the end of the world. Believe me, I know; I failed a few courses myself.

If you do find you are failing a course mid-term, look for help. Help can be obtained from your friends in the course, the professor, and the course's Teaching Assistants. If it is a math course, the Tutorial Centre (MC 3004) is also there to help you when you are in need. As a last resource, if you feel you cannot recover at all, look into withdrawing from the course. You can do this through the nice people in the Math Undergrad Office (MC 5115) before the end of the 10th week of term. This may allow you to dedicate yourself to your other subjects without being distracted.

If you have failed a course, especially if it is a math course, or a course required for your degree, I would suggest that you seek out your undergraduate advisor. If you don't know who that is, ask the Undergraduate Office (they know everything). When you see your advisor, just explain your situation and your advisor should be able to help you understand the implications of the failed course.

First year is a very traumatic time for some people. There are already enough new and confusing things in your life without having to worry about these things called classes. The University of Waterloo has been around for over 30 years, and the administration here has seen lots of people fail courses and still graduate. Failing a course will let you know something about yourself that will help you deal with your problems in the future. Look at it as another learning experience (groan).

I am not saying that failing a course is a good thing, and most of you won't fail any courses, but just remember that if you find yourself in trouble: seek some help and either get out of that trouble or find out where you stand. You may panic over nothing and get yourself in bigger trouble.

## Keener Bingo

You will soon learn that on occasions lectures become, well, less than interesting. For those times when counting ceiling tiles seems more appealing than the Diophantine equation on the board, we present: Keener Bingo.

To begin, we must clarify the definition of a keener. They can easily be spotted in the front rows of any class, where they are noted for their remarkable ability to ask an unusually large number of confusing questions during a lecture. They often bear an uncanny resemblance to characters in "Revenge of the Nerds." Standard keener equipment includes: a bulky briefcase, checkered trousers, undershirts and a powerful calculator. Optionally this can be a very powerful calculator such as an HP 48GX with card reader, printer, and optical wand. Other optional keener accessories include: a plastic pocket protector for the front shirt pocket (containing six different coloured pens, several mechanical pencils, a screwdriver and a pencil sharpener), a slide rule, a complete geometry set, and a well-used flowcharting template. Should all this not give them away, keeners tend towards extra long right arms (for better visibility), tape on their glasses, wearing T-shirts or buttons displaying the first 200 digits of  $\pi$  (which they know by heart), and having twice as much stuff in the briefcase as can possibly fit.

The act of being keen: you will come to be painfully familiar with this procedure. When the prof asks a question, makes a good point, omits something, or even for no reason at all, the keener will thrust his or her hand skyward and attract the prof's attention. This is almost always followed by a vapid and irrelevant question which serves only to confuse the class and often the prof.

**The Rules:** Pick out three keeners and write their names (class nicknames will do) on a piece of paper. As the keeners are keen, cross off their names. The first person to cross off every keener on their list yells "BINGO" and is awarded one bingo point. Play the game over several classes or several weeks and the winner is the person with the most points at the end of that time. For a more challenging game, arrange the names of nine keeners in a 3 by 3 grid. The winner is the person who first crosses off the names of three keeners in a horizontal, vertical or diagonal row. In both versions, the following rules apply:

- You may not use your own name, nor may you repeat names on the same card.
- An extra point is awarded if you preselected the keeners in the order that they were keen.
- Double score if you can guess their first words, such as "Sir...Sir...", "Professor...", "But...", "Excuuuuse me...", or the always popular "You forgot..."
- Triple points if the prof spots the keener but refuses to acknowledge his or her presence.
- Quadruple points if the prof threatens the keener.
- You are not allowed to physically abuse a keener in order to affect the placement of his or her hand.
- Bribes are illegal.

Before you begin, you may want to have a look at a keener at close range. Pay a visit to the EngSoc Orifice at Carl Pollock Hall. Happy hunting!



*continued from page 14*

(COOP 000) sessions. These sessions are run by the Department of Co-operative Education. Various aspects of co-op will be discussed there each week, so it is very important to attend these sessions.

The process for getting a job is really quite simple. For those of you in Stream 4, it is also a little rushed. Those of you in Stream 8 don't have to worry about this until January, but continue reading so you can prepare yourself.

Sometime around the third week of September you will have to prepared your résumé. About 20 to 30 copies will do. If you want help with preparing yours, there are many people who are willing to help you out in Needles Hall, co-op central. Around this time, there will be a number of postings in Needles Hall, as well as the first floor of the Math Building with loads of jobs.

Some time after this, there will be interview postings which will have all the names of people who have interviews within the next couple of days. Don't worry if your name isn't there on the first day, there are plenty more days to come. Be sure to check everyday. Missing an interview is bad news.

Co-op is trying something new this fall called "Continuous Placement" which will (more or less) take some of the stress off during interviews. After you have been interviewed, the employer will contemplate his decision, and eventually he will inform Co-op of his choice. Meanwhile, the student will rank any interviews they have had within the last week (Monday to Rhursday). and placements should be available by the end of the day (Friday).

This plan is in the fledgling stage, and I would highly recommend that you attend the Co-op information sessions this fall to find out exactly what is going on. With this plan there should no longer be a "Second Rounds," although after a time a co-ordinator may schedule a meeting to change some students' résumés

**Problems:** If you run into any problems at all, *don't ignore them*. See or call a co-ordinator and get it all straightened out even if you feel stupid doing it. If you can't find your co-ordinator go to the MathSoc office and ask to see a Students Advising Co-op rep. He or she should be able to solve your problem or tell you who to see.

Co-op is a wonderful experience. Jobs are available in places as far away as Seattle, Washington and Atlanta, Georgia. Students have even gone to Australia and Japan. So, you can look forward to all the good times and good people you'll meet on your work terms.

## Policy 33 and You

### *The University's Policy of Ethical Behaviour*

The primary purpose for the existence of UW is as a place of learning and research. Such activities are difficult or impossible to carry out in an atmosphere of hostility or fear. It is this knowledge that has led to the creation of Policy 33.

The purpose of Policy 33 is to ensure that all members of the University community (including students, staff, and faculty) have both the right to a non-hostile work or study environment and the responsibility to avoid making that environment uncomfortable for others. Basically, Policy 33 embodies what most people would call "common sense", and states that discrimination on basis of race, ancestry, place of origin, creed, sex, age, marital or family status, sexual orientation, or handicap is unacceptable.

There is no need to state the policy verbatim, although copies can be obtained from the University Secretariat (Needles Hall, room 3060) or online through UWinfo, the University's gopher service. The University has also published a pamphlet, *UW Policy 33 - How it affects Faculty, Staff and Students*, which can be found at various places around campus. The policy is broken down into five principles, but these can be summed up fairly easily by saying that discrimination on any basis is not tolerated. It also covers abuse of (academic and supervisory) authority.

The policy also outlines the procedures to be followed when a grievance is brought to the attention of the Ethics Board. The process allows for informal as well as formal complaints and investigations to be made.

So what does this mean to you, the undergraduate student? It means that if you feel you are being threatened, harassed, abused, discriminated against, or otherwise made to feel uncomfortable, it is your right to bring it to the attention of the Ethics Board and have action taken. For example, if an instructor makes a joke about a particular group of people that makes you uncomfortable, you can take action. For many, the first action would be an informal complaint to the instructor in question, letting him/her know that such jokes are not appreciated. If that failed, the complaint could be made formally to the Ethics Board, which would take appropriate action after an investigation.

As a final note, the policy has a special provision covering the touchy subject of academic freedom. This is defined as "the freedom to study, teach, publish, and debate, independent of current opinion, subject to commonly accepted scholarly standards." Members of the university community are responsible for their own academic freedom and expressions thereof. A good example is the "banning" of several Usenet newsgroups in the winter of 1994. These newsgroups carried material that some individuals on campus found offensive, so the University stopped carrying them. Access can still be gained to the newsgroups by individuals wishing to do so for academic reasons, however.

If you have any questions about Policy 33, feel free to contact the Board of Ethics, or any member of the Board.

Steve "For once, this is a serious article" Shaw

## Things Frosh Should Know

*(or at least the stuff we're willing to tell you)*

- OSAP only works for 8-stream or regular. If you are on 8-stream and switch to 4-stream, you may have to be re-assessed and could owe the government mucho \$\$\$.
- Some of the profs don't use all of the texts on the course list. Go to your first class and ask. You usually don't need your texts the first week of classes. When you are ready to buy, remember to check the used bookstore (a couple of times) located in the basement of the Campus Centre.
- Make sure to buy your tunnel pass early.
- **DON'T MISS THE MATH FROSH ORIENTATION EVENTS.** If you don't come to the events, you might find yourself in a class of 250 strangers. This is the best place to meet friends in Math and have fun at the same time.
- Remember to go to the Bombshelter on your birthday (provided you are of age) to get your birthday mug. Your 19th earns you a t-shirt too.
- Volunteering is fun! You may find people to help you with your courses and have some fun with. Volunteering may also get you free stuff but if it doesn't at least you'll have the undying gratitude of MathSoc.
- Bring ID to get your student ID card. Picture ID is the best: a driver's licence, passport, age of majority card, etc.
- Have a resume ready if you are in 4-stream. There are several good copy places on and around campus.
- If you live in Village, don't eat anything you can't identify. If you live on your own, don't eat anything in the fridge that moves.
- Get a locker in the math building the first week of classes. First come, first served. Sign up in the MathSoc office, MC3038.
- Government jobs don't pay well. (I know. I had one.)
- All Math students have an UNIX Internet computer account on the undergrad network. Ask a friend, the Computer Science Club, or a MFCF consultant about how to log on. Activate your account and change the password ASAP to make sure it doesn't get terminated or stolen.
- Speaking of which, the Computer Science Club is a great club to be a member of if you plan to use those computer accounts.
- The Princess Cinema is a good, cheap place to see second run or interesting (weird if you like that word better) movies. Schedules available in the Campus Centre.
- The Math C+D (coffee and donut shop) on the 3rd floor of the math building is more than just coffee and donuts. There is good, cheap food for lunch, dinner, or a snack.
- People in co-op had better be prepared to work ANYWHERE. Don't count on living at home. You could get a job anywhere, from Redmond, Washington to Halifax, Nova Scotia to Tokyo, Japan
- Make sure you have five (5) courses. Trust me on this one.
- Get a calendar, just in case.

Monica "Rapunzel" Rooney

## Fees

(and other four-letter words)

When you first looked at your fee statement, you probably noticed several things. You noticed that it was white and dark green. You noticed that it had your name printed on it. Then you noticed the line that said "Balance due" and the number beside it: (*really big number deleted to avoid scaring the weak-hearted -Ed.*). When you recovered, you probably saw the many smaller fees that make up this whopping total, and wondered what they all were, and more importantly if you really had to pay them all. Well, you don't actually have to pay them all ...

### Fees You Have To Pay

- **Tuition:** This is the basic tuition Fee, which covers the basic costs of the courses you'll take for the next four months. Individual courses may have other costs associated (such as lab breakage cards for chemistry labs), which will be assessed later, but most course costs are covered by this fee.
- **Co-op Fee:** All co-op students pay this fee to cover the costs the university incurs in handling the co-op program. Supposedly, the salaries of co-ordinators (who are supposed to find jobs for students, although it often seems to be the other way around), bookkeeping costs and other items are paid for by this fee. In fact, the university sets this fee, not the people in co-op, so don't complain to your coordinator that you're not getting your money's worth. This fee must be paid by everyone in co-op, regardless of whether or not you go through interviews in a given term.
- **Work Rpt Marking:** Co-op students pay this fee. This fee is paid every term, whether or not you submit a work report to mark.
- **Health Insurance:** This insures both you and the university. The health insurance you buy helps cover insurance costs for the university, and you get a discount when buying prescription drugs (even on work terms) and other things. For more details, go over to Health Services and pick up their brochure.
- **Athletic Fee:** This fee funds our intercollegiate teams (football, basketball, volleyball, swimming, etc.) in their support and operation, as well as tournaments and meets.
- **Fed. of Students:** All undergraduates at UW can belong to our Federation of Students, the "Feds." They provide lots of services, like Scoops, two pubs, legal services, a word processing service, Fed. Buses to Toronto and more.
- **Federation Hall:** This fee goes toward paying off the student pub located on campus near Village 1.
- **Student Co-ordinated Plan:** A large endowment fund has been created for use by the students for the improvement of student life. There are lots of exciting new plans that have been made possible by this fee.

### Fees That You Can Get Back Later

The remaining fees can be refunded by applying to the appro-

priate organisations within three weeks of the start of lectures. Most of these fees support interesting and worthwhile organisations, which are run by and for students. They would love to have you join them and help them out.

- **Imprint:** *Imprint* is a campus "newspaper" published every Friday. The quality of the paper is directly attributable to those working on it, and the quality goes up and down, but it often contains information of immediate relevance to the student population.
- **Waterloo P.I.R.G.:** The Waterloo Public Interest Research Group, WPIRG, is a student funded public affairs group which has studied such things as nuclear waste and acid rain, and brought in speakers such as Ralph Nader.
- **Radio Waterloo:** CKMS ~~100.3~~ FM (in stereo) is the student run radio station here on campus, providing a wide variety of programming over a range of musical styles and subject matter.
- **Student Society:** This is your Math Society fee. MathSoc funds various services and events for mathies. See the article elsewhere in this issue for details.
- **Math Endowment Fund:** The Math Endowment Fund is used to finance various projects of interest to mathies. See the article elsewhere in this issue for details.

## Financial Assistance

University is a very expensive habit (\$1513 for most just to come here). Even in the co-op program, some students find it hard to make ends meet. But do not fear, there are sources of income most students can apply for.

The Ontario Student Assistance Program, better known as OSAP, is the largest. Get the proper forms from the Registrar's Office, fill them out, and send them in sometime in September. Although they may tell you the deadline is passed, that just means you won't be getting any funding until near the end of the term (when you need it most). A new regulation has been passed that allows most students who apply to receive a loan, and grants will be given on a very limited basis (ie. Only those who fit a narrow category will receive grants). The loan is interest-free until 6 months after you are no longer a full-time student.

OSAP isn't the only source of money. There are numerous scholarships and bursaries available that are often forgotten. Check the Undergraduate Calendar to see if you qualify for any.

If OSAP and other student awards leave you wanting, there are many jobs available on- and off-campus. Check out the Student Part-time Employment Center (SPEC) in the Campus Center, or the Ontario Work-Study Program in Needles Hall (Registrar's Office, Student Awards desk). Beware: jobs cut into study and leisure time.

## The mathNEWSquiz

### ARTS Entrance Exam

Hello everyone! I'm your trusty mathNEWS Quizmaster, and right here in every issue of mathNEWS is where you'll find your regular fill of trivia, movie quotes, song lyrics, and useless knowledge. Test yourself with every 'squiz and you could win a prize. This issue, we present a special 'squiz for you. We have our sources in the Arts Faculty (namely me) who have direct access to the Arts entrance questionnaires. You have a special sneak peek at what the Artsies are tested on before they are accepted into the Faculty. Relax and enjoy a good laugh at the expense Arts students everywhere.

#### War & Peace

1. When did the War of 1812 start?
2. Which came first, World War I or World War II?
3. In what country did the Korean War take place?
4. How long was the Six Days War?

#### Pot Pourri

1. What is the shape of King Arthur's Round Table?
2. In which country would you find the Great Wall of China?
3. Who is the Lincoln Memorial named after?
4. True or False? (Note: there are two possible answers to this question)

#### Television

1. What profession is featured in the programme "COPS"?
2. What is the location of the show "Beverly Hills 90210"?
3. Who is the host of "The Oprah Winfrey Show"?
4. In which city did the show "Dallas" take place?

#### Movie Quotes

1. "Won't you please welcome, from Calumet City, Illinois, the show band of Joliet Jake and Elwood Blues—The Blues Brothers!"
2. "Another time, Highlander. I will find you."
3. "Sincerely yours, The Breakfast Club."
4. "I've got just four words for you—White Men Can't Jump."
5. "If you've just joined us, this is Dr. Marcia Fieldstone, and we're here talking with Sleepless in Seattle."

#### Song Lyrics (just name the song)

1. I'm an adult, now  
I'm an adult, now
2. Love shack, baby, love shack
3. If I had a million dollars  
(If I had a million dollars)
4. Band on the run  
Band on the run

### Final Question

1. Do you have a pulse? (Just ignore those other questions. This is the only question we ever look at anyway)

Curtis "Token Artsie" Desjardins

## Advanced Insanity?

"To be Honours, or to be Advanced, that is the question." This thought may be occurring to you now. For those of you who just checked boxes at random on your pre-registration form without really reading them, there are two different levels of honours Math courses. Most math students choose to take MATH 135/136 and MATH 137/138. There are advanced versions of these courses, MATH 145/146 and MATH 147/148, which are also available. The advanced courses cover the same material as the regular courses, but may not be limited to that material. These advanced courses are more theoretically oriented than the regular honours courses. Don't forget though that MATH 135/136 and 137/138 are challenging enough for most people—they aren't called Honours for nothing.

The advantage of taking the advanced courses is smaller classes (30-40), which allows friendships to develop more easily and gives a more personal rapport with the professor. The homework will challenge you as much as you want or can handle, and is less mechanical in nature. The courses offer understanding of the "why" of concepts behind a problem, and not merely the "how to" knowledge to solve a problem. As an encouragement to take these courses, the Math faculty has assured students that taking these courses will not significantly change the final marks that they would have gotten in the regular honours sections. Further, if you intend to major in Pure Math, you will have a very noticeable advantage in third and fourth year if you take Advanced Honours in first and second year. The theoretical background will prove invaluable.

Now, the disadvantages. There is some tendency to lose contact with the rest of the first year students because of the separation of the courses. Furthermore, advanced classes can at first seem more competitive. Because the assignments are not mechanical, students must provide some of their own practice problems, or face difficulties in later senior courses. Finally, there is no official recognition of the advanced honours graduate.

If you enjoy mathematics, such as that on the Descartes, and want a thorough understanding of some basic math concepts, then you should consider the advanced courses. The faculty has set it up so that it's relatively easy to switch from the Advanced courses to the regular Honours courses without doing any other damage to your timetable.

Most people in the regular Honours sections felt that their courses were enough work. They believed they would not have survived the advanced courses. Remember – the decision is yours and yours alone.

I stuck it out through three terms of advanced honours and I'm glad I did. The deeper understanding I gained helped me in later courses.

## Math, the Universe, and Everything

*Clean Genitals are Happy Genitals, and Other Things They Don't Tell the Frosh*

You're finally out of the house. Frosh Week looks like it's going to be fun, and you're well-prepared for it since you read the amazingly informative and attractive newsletter *The Math Frosh Primer*. You're probably feeling pretty good about yourself, and you should—anybody who can make it into the Faculty of Math without resorting to the use of large bribes deserves some respect.

But the term is very young, little froshling. There are some things you may have already found out on your own, and others you can't find out without breaking a few laws. And there are still other things you can only learn after experiencing them.

### *Stream 4 is where it's at*

The benefits of going to work on your second term are plentiful. First, you usually get put in Village 1: a bit more expensive, but you don't have to worry about your roommate walking in while you're having sex with your TA. You're not going to meet as many people in V1 as you would in V2, but the suicide rate is lower, so you'll probably come out ahead.

Another benefit is that you only have to pay for four months of school before going on to earn untold riches in the workforce. This guarantees that you'll have enough money to support your new hobby, alcoholism, and will still have enough left over to eat a couple of times a week.

But this all pales beside the simple fact that Stream Four students only compete against other co-op students for jobs, but Stream Eight students compete against every fucking student in the country for jobs. Little things like that will help a lot when looking for your first job, especially since Needles Hall is only placing about three students per term in jobs.

The last benefit is probably the best: Stream Four students get to spend 1B, one of the easiest terms, at summer school. Summer school is great: it's just like the winter term, but it's warmer, and the Bombshelter usually lowers beer prices. What more could you ask for?

### *Sex*

First off, I'll say this: various venereal diseases, fungi, and infections run rampant on this and just about every other university campus. I don't care what you stick it in, or what gets stuck in you, but pay attention to what you're doing. Safe sex is more than a buzz-phrase: practise it, especially if you pick anyone up at Fed Hall.

Now that the unpleasant stuff is out of the way, we'll get right into the pleasant stuff. Sex is great, and all frosh should enjoy it. (Enjoy it while you can: I don't think I've had sex since Frosh year. At least, not while I was sober).

Some of you are quite happy, because now that you're out of the house, you have free rein to get all the sex you want. A significantly smaller proportion of you are upset because now that you're out of the house, you're getting less sex—I really don't want to know about it.

### *Beer is your friend - your only real friend*

As you wade through Frosh Week, you will learn that there are actually bars on campus—two of them, in fact. POETS is the engineers pub, and is squirreled away in one of the engineer-

ing buildings somewhere. The second bar is the Bombshelter, located in the Campus Centre. I've been to a few bars in my life and I'm happy to say that the Bomber is the best bar in the world. The music is great, the beer is great, the food is greasy, and the bouncers hardly ever beat people up without a good reason anymore. There are rumours of a third bar up by the Villages somewhere, but when I went to look for it, all I found was a big gym with a whole crowd of underage people sweating in time to some really bad music and paying too much for frooty drinks. So, it's not a real bar. I think it's called the Twist or something like that.

No matter where you drink, be sure to drink a lot. As long as you spend all of your time drunk, little things like failing a course or six are not going to bug you. If you run out of money, start using your credit card. No credit card? Use your roommate's card instead—think of all the GM points you'll be racking up for him. He'll thank you for it.

### *Choose your electives carefully or How I spent my summer vacation*

Be sure to balance your schedule carefully. Take as many bird courses as you can. The one mentioned most often is Professor Lawrence's MTHEL 100. Not only is the material fairly easy, but Barney is one of the most entertaining guys you'll ever meet. Be sure to attend a couple of lectures when you take the class. Other favourites for math students are MUSIC 100 and PHIL 145, both of which are great because you don't actually have to go to any classes. Whatever you do, don't take a minor, or meaningful electives. They'll just cut into your drinking time.

### *The Kampus Kowboys are real cops with badges and everything*

At somepoint or another, you're going to run into trouble with the Kowboys. Be polite, they can arrest you. But if you want to avoid trouble with the Campus Gestapo, it's easy: just stay off of Ring Road. It's against union rules for the cops to actually get out of their cars, or patrol the campus on foot, or do anything to actually help people. They're really good at giving out parking tickets and drinking coffee, but less proficient at catching bike thieves, keeping the campus safe, and shutting down prostitution rings, mainly since these latter problems cannot be addressed while sitting in a car.

### *A few things to remember*

- You've never had too much to drink.
- Chances are you're not going to pass everything, so why bother going to class?
- I don't care how much he/she loves you, don't give away your Nintendo.
- The other faculties are great: engineers are just like us, arts students are fun, science folk are neat, and Rec Students exist just so we have somebody to make fun of.
- Clean genitals are happy genitals.
- The best part of mathNEWS is the Subway coupon.
- People at Needles Hall have no sense of humour.
- When in doubt, have a beer.

continued from page 22

- There is nothing wrong with skipping class to go to the Bombshelter.

### *Don't take anything too seriously*

Probably the most important thing to remember is to not take anything too seriously. (That includes me by the way). It's only school; It's not like the degree means anything. Relax, have fun, liquor up some of those pesky ducks - whatever turns your crank. The most important thing you're going to learn at school is to not drink tequila on an empty stomach; everything else is secondary.

Steve "I'm not only the editor - I'm also a writer" Shaw

## The Acquisition of Textbooks

There are basically three ways one can purchase textbooks: from the UW Book Store, from the Used Textbook Store, and through private arrangements. The UW Book Store is located in South Campus Hall, which overlooks the southern entrance of the campus. All textbooks for your courses should be available there. As well, a list of required and recommended textbooks is maintained there. However, you can get a better price by buying used textbooks, and there is a high probability that you will wait an extremely long time in the line-up to get in. The Book Store is a small place for the volume it has to handle in the opening weeks of the term. Here are some tips for shopping at the Book Store.

First of all, try to shop as early as possible, to be sure you get your textbooks. The Book Store tries to keep sufficient supplies, but it sometimes runs out of textbooks. Keep all of your receipts so that you can get a full refund if you drop a course or if you discover that you've bought the wrong book. There are two types of cashiers: those who handle cash only and those who handle cheque and credit card transactions. The line-ups for the cash cashiers tends to move more quickly than the other line-ups. (more line-ups, sigh!) Finally, the Book Store is partitioned into two areas during the first couple of weeks. Textbooks for math, science and engineering type courses are available on the lower floor of the Book Store. The entrance to this section is located at the back of the Book Store and can be easily identified by the line-up in front of it. The upper floor contains textbooks for the other courses (eg. arts), as well as stationery supplies, with access via the main entrance. **NOTE:** There has recently been construction to South Campus Hall, so this partitioning into Upper and Lower levels may not occur anymore.

Should you wish to save some money on textbooks, there are two options you might consider. One is to watch the bulletin boards for people advertising used textbooks. The other is to check out the Used Book Store, located in the basement of the Campus Centre (If construction on the Campus Centre is still happening, the Used Bookstore can be located in one of the portables located between the Math building and the Campus Centre). However, you should not expect to get all of your required textbooks from these sources. And before you buy, make sure you have the right textbook *and the right edition* - all sales are final at these places. It's not a bad idea to go to the UW Book Store before checking out these places, so that you know what to get.

## Prof Football

This classroom distraction is a time-honoured tradition at U(W). It was inaugurated by our fabulous football team, the Waterloo Warriors, who are finally showing the spark that may lead them to victory in the Vanier Cup!

The only requirement for this game is that it be played in a lecture with a prof who paces. Before the lecture begins, divide the class into two teams. For example, use the aisle in the middle of the room as a dividing line. You must also mark two goal lines at the front of the class. Do this by placing a piece of tape or other marking on the blackboard or front wall about one or two metres in from either side wall. When the prof arrives and the lecture begins, you can start playing Prof Football.

The object is to score a touchdown, which occurs when the prof crosses the goal line in front of your half of the class. The opposing team can try and prevent a touchdown from being scored by attempting to attract the prof to their half of the classroom, and then possibly score a touchdown themselves! The best way to attract the professor's attention is to raise your hand and ask a question. This requires some imagination because the question should be relevant and so must be thought up on the spur of the moment. Watch out though, because asking a lot of confusing questions could make you part of a keener bingo game (see the article elsewhere in this issue.)

It is best to play two twenty minute halves with a ten minute break at half time. This makes for a full fifty minutes of lecture entertainment. So, go out there and win one for the Gipper!

## Did You Know...

(From the UW 94-95 Undergrad Calendar)

1. ... the Imprint "is dedicated to the intellectual analysis and coverage of the news, arts, sports and issues of the day."
2. ... the whole rest of the world thinks a dot means the end of a sentence, while we know it represents a workterm.
3. ... an objective of the Federation of Students is "to act as the representative of the students."
4. ... Newfoundland, Hong Kong, India, and Central and South America are the only regions listed from where you already have to have completed at least one year of university to gain admission to UW. (Are we good or what?)
5. ... if you are good, the Senate of the University could confer an honorary Doctor of Divinity Degree on you.
6. ... the Faculty of Mathematics has 13 miscellaneous policies. This is more than any other faculty; actually about 13 more.
7. ... if you open the calendar exactly in the middle you can read all about your favourite faculty. No, not Science.

## Student Vocational Advisors

The Student Vocational Advisor (SVA) programme assists students with answers to questions on career planning and job search. The SVA programme provides students with a readily and easily approachable peer resource to help them with all aspects of the job search, whether the job is a summer job, co-op position, or full-time career.

SVAs are students trained in all areas of career planning and job search. SVAs are volunteer students who work closely with Career Services. SVAs maintain weekly office hours within all six faculties. Office locations and hours can be obtained from Career Services in Needles Hall, or from SVA posters located around campus at the beginning of the fall and winter terms. Students seeking help should drop into an SVAs office during weekly hours.

The SVA programme can help students to identify skills and interests, write effective resumes, develop successful interview skills, and plan their career and job search. Visit an SVA and make an investment in your future.

## mathNEWS' Top Ten Excuses for Late Assignments

10. I had to remove all the vulgarities.
9. I sold the publishing rights on it to Penguin Books and they haven't sent it back yet.
8. Oh, I thought you meant September 24th *next year*.
7. My horoscope said, 'Harm will befall you if you get everything done.'
6. My friend wasn't done his assignment on time, and I had to clone it.
5. I was too sober to finish it.
4. I have to walk past Laurier on the way here and I was mugged by a bunch of football players.
3. The 'e' key on my typewriter was busted and I had to look in a thesaurus for synonyms.
2. 50 dollars? I thought you said 20 dollars!
1. I was reading mathNEWS.

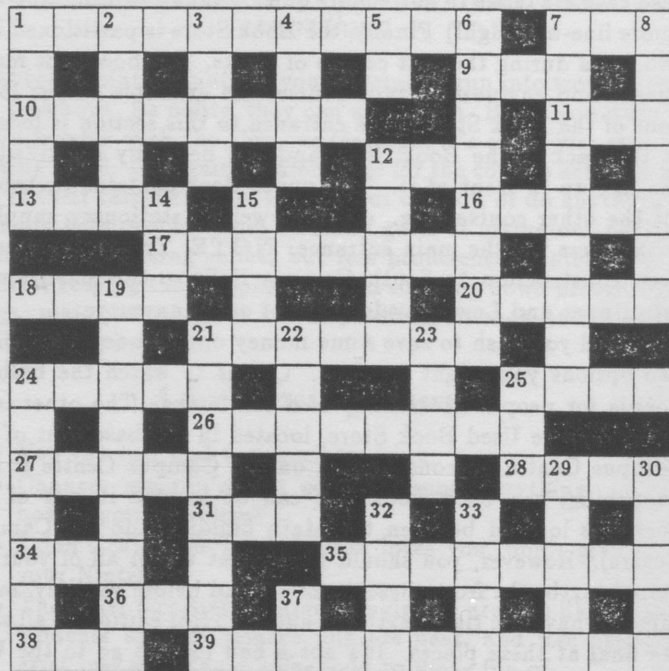
## University of Waterloo Makes Stalking a Problem of the Past

Are you being stalked? Or just mildly irritated? Then UW has the answer for you! Enrol in the UW co-op program and frustrate even the most persistent of stalkers. Much better than the witness protection program as you can still keep in touch with your family to ensure financial stability, and sometimes you get good jobs and earn lots of money! Just look at what this program offers:

- move every four months
- never have your name listed in the telephone book, and if it is, it's at least a year out of date.
- make a new batch of friends every four months.
- if you dye your hair lots, no one will remember you from the previous term, especially if you go by different variations of your real name.
- and for those real hard cases, change faculties every term!

## Hierarchy of Life

Oreo Ice Cream  
 Mathies  
 The Natural Log/The Pink Tie  
 mathNEWS  
 C+D  
 Labatt's 50  
 Jolt Cola  
 MathSoc  
 Bombshelter  
 The Far Side  
 Star Trek  
 Haagen Daaz  
 EngSoc  
 High school down the road (WLU)  
 Engineers  
 Kitchener Transit  
 High school down the highway (Guelph)  
 Village "Food"  
 IBM  
 Fed Hall  
 Keeners  
 Imprint (Imp'tint)  
 Artsies  
 8:30 classes  
 Needless Hell  
 The Tool  
 Baseball Strikes  
 Hierarchies of things  
 UWO (Western)





# GridWord Know-How

## GridMonster Kow-Tow

This is an attempt to clarify the peculiarities of the mathNEWS GridWords. The GridWord (the crossword puzzle on the back page for those of you who have not yet gotten that far) has two different sets of clues for two different solutions, one conventional and one cryptic. The conventional puzzle is a standard crossword puzzle, the solutions being synonyms for the clues. It is perhaps a bit more difficult than normal, because of the lower word density.

The cryptic is similar to, but very distinctly unlike, what fans of the New York Times would recognise. Generations of Mathie GridMonsters have been raised on a diet of Grids from their predecessors and the style has diverged in time. Defining the particular style is difficult; it is not clear who will be doing the Grids this semester and it is frequently not the same person in successive issues.

The clues give two definitions for the word: a direct definition and a cryptic definition. This may sound like a piece of cake, (Two clues for *each* word!) but it can be difficult to distinguish the two parts. At the end of the clue, the number of letters in the answer is given.

At first the cryptic clues may seem meaningless or nonsensical. The GridMonster hopes that they make sense when deciphered. (Having a slightly warped mind helps sometimes.) A clue may be any one, sometimes more, of the following types. Look for keywords or patterns.

**Anagrams** One or more words in the clue are jumbled to give the solution. Key words: scrambled, agitated, mixed, sorted, confused, etc.

"A beat agitates for the diminution" = ABATE from the letters A BEAT

**Construction** The answer is assembled from parts given in the clue. Key words: follow, after, before, on, etc.

"He was first to build a water barrier" = ADAM build from A DAM

**Alterations** Split words or switch them around. Key words: in, around, split, turn, back, up, etc.

"Content and very quiet in the hay" = HAPPY, from PP (= pianissimo) in HAY

**Dropping Letters** Remove a letter from a word. Key words: headless, tailless, endless, heartless, etc.

"The head of the host was lost to the wealthy bird" = OSTRICH, from HOST without the H plus RICH

**Double Clues** Two definitions are given for the answer.

"An article of French tea" = THE, an article and the French word for "tea"

**Hidden** The answer is hidden in the letters of the clue.

"The band is tantalising from afar" = DISTANT from band IS TANTalising

**Homonyms** The answer to part of the clue sounds like the solution. Keywords: anything related to hearing or sound.

"I hear the crew will be mean" = CRUEL from CREW'LL

**Other Instructions** Other words may indicate how to construct the solution. Possibilities: every other, alternately, initial, etc.

"Every other oblong marsh" = BOG, every other letter from oBlOnG

"Particle is initially a trio of moons" = ATOM, the first letters of A Trio Of Moons

**Special Words** By convention some words have special one or two letter meanings for word building. Examples: direction: N, S, E, W; hesitate: ER; loud, fail: F; love, nothing: O; fifty: L; current: AC; and many, many others.

Even having read these instructions, you may find that GridWords can be quite discouraging. A first pass through the clues may produce no results, but a little work, some searching for keywords and a bit of fiddling should get most answers. As you get solutions, you will get a better feel for the clues and they can lead you to other solutions. Checking against the solutions and looking for the connections is another way to gain understanding. Persevere! Even the GridMonsters were neophytes once.

## Introductory GridComments

### GridWord 101

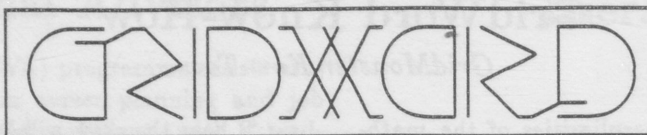
Welcome, frosh, to your  $n$ ,  $n \in \{3, 4, 5, \dots\}$  year stay at UW. This is your GridMaster speaking, and if you will please extinguish all smoking material, we will be under way as soon as we receive clearance from the editor.

The GridWord is a regular feature of mathNEWS, providing you with hours of Friday-morning diversion while your Calculus prof drones inexorably to some unknown goal. This GridWord has two purposes: to expose you to some things that you, as a frosh, will find important; and to introduce you to the wonderful world of cryptic crosswords. For those of you who are unfamiliar with this particular realm of crosswords, it involves clues in two parts, one being a definition of the word, and the other being a sort of play on words that lead to the correct solution. For more details on how to solve a cryptic, there's an article around here somewhere.

For those of you who are adventuresome enough to complete either the Conventional or the Cryptic grid (or both), you can submit your entry to the BLACK BOX across from the Comfy Lounge. A name will be drawn at random from all the correct entries and they will win a fabulous mathNEWS prize!!! The lucky winner will be drawn on the first mathNEWS production night in September.

In the meantime, I hope that you find this puzzle an enjoyable introduction. Have fun during Orientation week and party hard - it may be a while before you can afford to again.

Eric "Slave Boy" Sutherland



## Cryptic

### Across

1. Avoid donating the undergarment (4,3,4)
7. Endless like is sickening (3)
9. Miss a shot around the coffee cup (3)
10. A wager with a greek spells trouble (8)
11. Surround love with  $\pi$ ? Only in Hawaii (3)
12. Back to Jamaica, so make quick notes (3)
13. Not done, work at the vertex (4)
16. Heart attack! It's our mother (5)
17. Hear off-blue insects exercise in water (8)
18. Worry regarding foot treatment (4)
20. Summer shirts in Nova Scotia for adolescents (5)
21. A good outcome from bad pool (7)
24. Prickly pair (5)
25. Mr. Sato proofs find him above (4)
26. Not I, Cal! Listen to the water device (8)
27. Worm is as luggage is to me (1,4)
28. A yes is bad? Simple! (4)
31. Don't run! You'll break the vase (3)
34. Pink dye (3)
35. Clean bar, but left with sea leeches (8)
36. Ban Shaq's league (3)
38. Guru tries to find groove (3)
39. Cur at rest is surrounded by deer. He raised the dead! (11)

### Down

1. A grin is terrible with wheat (5)
2. Beginning avacado dip is poor and uninteresting (5)
3. Arty carrying device (4)
4. You're some female sheep (4)
5. Magic town (2)
6. Expert experiments have people up in arms (8)
7. Not correct (9)
8. Not days of old (7)
12. Orange electricity (5)
14. During dinner, not after (3)
15. Hear the animal house. Lou is African (4)
19. Great! Go beyond passover finale! Y'hear? (9)
21. One lug rains down (8)
22. Stir a while. Cahoun! Run alternately! (5)
23. Bad flus (4)
24. Likely, Cher will surround a new part of her life (7)
25. The beer sounds like a sickness (3)
29. A person north of England wears this (5)
30. Stop for ye old parlor(5)
32. Rail rides to refuge (4)
33. The only time for a bad cone (4)
37. We in the United States (2)

## Conventional

### Across

1. Campus pub (11)
7. Spot on a die (3)
9. Yours will be quickly deflated (3)
10. Lowest known form of vegetable life (8)
11. The MacLab uses one (3)
12. Cowardly dog (3)
13. The engineers and mathies each have one (4)
16. Incompetent, incapable (5)
17. It will enable to finish your work (8)
18. Hindu goddess of destruction (4)
20. An elected representative (5)
21. A small warship (7)
24. To soak or steep (5)
25. Exam preparation technique (4)
26. Final exam month (Fr.) (8)
27. You'll see a lot of these in Calc. and Alg. (5)
28. One of your gods for the next four months (4)
31. Faculty MathScot and well-known function (3)
34. The real name for DavisWorld (abbrev.) (3)
35. This wonderful metropolitan centre (8)
36. In Latin, thus (3)
38. Foot part (3)
39. Dean of the faculty (11)

### Down

1. Many of these will be consumed in frosh week (5)
2. Method by which your profs derive difficult results (5)
3. Ride the wave at this function (4)
4. Particularly slimy engineer subspecies (abbrev.) (4)
5. Home of the Dome (abbrev.) (2)
6. An assignment extension (8)
7. Favourite prof suit fabric (9)
8. Other Faculty MathScot, you'll have to wear one (7)
12. Students aren't popular in this country (5)
14. Suffix for Hi-Fi and Sky (courses) (3)
15. At a distance (with *from*) (4)
19. Your CS course is one (9)
21. A movie shown in AL on the weekend (8)
22. In disguise (fig.) (5)
23. Opus' instrument (4)
24. The campus rag (7)
25. You won't have any of this after an all-nighter (3)
29. You should be aware of regulations (5)
30. You are one (5)
32. Less than whole (4)
33. It is good and right that you are the least of all. (4)
37. The cave where they keep the engineers. (abbrev.) (2)